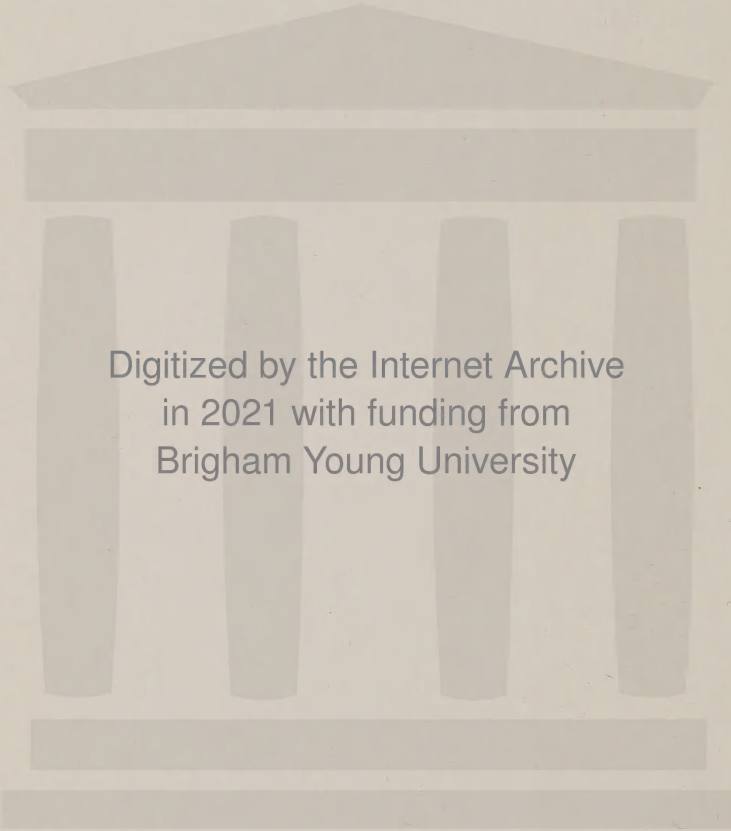




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AMERICAN DYESTUFF REPORTER

VOLUME 3
1918

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, July 1, 1918

No. 1

"Watchful Waiting" and The Dyestuff Industry

GOVERNMENT INTEREST IN DEVELOPMENT OF TRADE A HEALTHFUL SIGN AND
INSURES JUSTICE TO ALL

THAT the eye of official Washington will remain closely fixed upon the American dye manufacturer in his race against time and impending Teutonic competition is evidenced by the recent statement of Dr. F. W. Taussig, chairman of the United States Tariff Commission, which has but recently completed its census of coal-tar products manufactured in this country during 1917. Referring to the expenditure of the \$200,000 allowed the commission under the Sundry Civil Service Appropriation bill, Dr. Taussig said that the commission had in hand an inquiry upon the dyestuff and chemical situation, which includes likewise the explosives situation.

"In the act of 1916, establishing this commission," he continued, "Congress amended the dyestuffs and coal-tar products schedules of the tariff act somewhat hastily, and we have found that the legislation has loopholes. It does not carry out the intention of Congress. It is an extremely technical subject. Connected with that, a section of the coal-tar products act of 1916 provided that in a certain amount, 60 per cent., of the

domestic consumption was not produced in the country, the duties should cease. The President imposed upon us the duty of taking a census annually of the coal-tar products to see how much was produced. We are now taking the first census as of January 1, 1918."

The "60 per cent. clause" placed the time which must elapse before duties on imported dyestuffs automatically cease at five years, as is well known. This clause was recently made the subject of comment in which the view was taken that, because of the splendid effort made by the dye manufacturers and the rapid progress thus far recorded, the five-year stipulation should be amended in such a way as to make it less harsh, or possibly done away with entirely. In other words, the dye manufacturers have been good boys; stop threatening them with prospects of future punishment if they don't behave; remove from their minds the black pall of worry which is perpetually oppressing and distracting them, and let them get their poor, tired nerves in shape again as they gird themselves anew to perform fresh prodigies.

The question is an extremely delicate one, as any question relating to the tariff must necessarily be, and it involves a whole flock of ifs and buts. And if the dye manufacturers are indeed proceeding at such a gait that the clause will never become operative, as seems to be the case, then why concern ourselves as to whether it remains on the statute books or not?

Monkeying with the tariff and with a buzz-saw are both highly hazardous occupations, and should only be approached when no other alternative presents itself, and then only after prayerful forethought and consideration of possible consequences. But standing forth clearly from the maze and jumble of conflicting interests and theories is this one all-important fact: that the question is not whether the industry may or may not survive, nor yet whether it ought to be allowed to survive to the detriment of any particular group or combination of interests, but that it *must* survive, no matter at what temporary cost and no matter whose toes may be stepped upon for the time being. To discuss the "probabilities" of its survival is futile, for any other outcome is unthinkable.

We claim to have learned a great lesson in preparedness from this war. Just how well we really have learned that lesson the next year or two will show. Every once in so often come press dispatches stating that Germany is preparing for the next war. Very likely this talk is mere bravado, intended to foster belief in German ability to win the present one. But we should have learned by this time not to speculate in probabilities, and just as long as Germany continues to say she is preparing, can we ourselves do less? Never—until the rumors stop.

That alone is sufficient reason why the dyestuff industry, being practically interchangeable with the explosives industry, must survive in this country. There are a host of other perfectly sound reasons, but that alone is enough to satisfy anyone who senses fully the experience which we have just been through.

And that is why the industry should have sufficient protection to bring this to pass. This protection should last neither for five years nor for ten years, nor for any arbitrary number of years, but for just the right number of years to insure the survival of the industry. The industry must have this protection because it is a vital necessity and not because of the beneficial psychological effect upon manufacturers.

The dye dealers as a group are disposed to view the possibility of further protective measures with alarm. They fear for their interests, and already some are raising a cry for "revision downward" to be applied to our coal-tar chemical schedule. But those of broader vision among them will see that the interests of a small group must logically give way before the advancement of a principle so bound up with the interests of a whole nation. And better still, they will also see that there are many ways of protecting the dealers even while enforcing adequate protection for the dye industry. These are extraordinary times, and it is not to be supposed that an Administration capable of inaugurating wheatless, meatless and heatless days, to say nothing of lightless nights and other radical regulations for the protection of our resources and manufactures, would find itself unable to cope with the situation in case dye prices follow too closely upon the heels of an ascending tariff.

The effort to establish a self-contained coal-tar chemical industry in this country has created an interesting and delicately balanced situation with respect to dealers in, and manufacturers of, dyestuffs. As the months pass, and the tension increases, it will become more and more engrossing and needful of intelligent supervision.

Therefore, the watchful eye which the Government seems disposed to keep upon the affairs of the industry is at once satisfying and reassuring. Moreover, it is a guarantee that justice will be done to all interests concerned.

PLANS UNDER WAY FOR FOURTH NATIONAL EXPO- SITION OF CHEMICAL INDUSTRIES

THE Fourth National Exposition of Chemical Industries will be held in the Grand Central Palace, New York, during the week of September 23 this year. Its advisory committee is composed of Charles H. Herty, chairman; Raymond F. Bacon, L. H. Baekeland, Elwood Hendrick, Henry B. Faber, Bernard C. Reese, A. D. Little, William H. Nichols, R. P. Perry, H. C. Parmelee, G. W. Thompson, F. J. Tone, T. B. Wagner and M. C. Whitaker. Dr. Bacon, of this committee, is now head of the Chemical Warfare Section of the National Army, and a member of General Pershing's staff.

The coming exposition will be the largest chemical exposition ever held, and it will be necessary to use four floors of the Grand Central Palace. The exposition is a war-time necessity, and, regarding it as such, each exhibitor is planning his exhibit so that it will be of the greatest benefit to the country through the men who visit it, all of whom are bent upon a serious purpose—that of producing war materials in large quantities, and constantly increasing this production till the war has been won by the United States and its allies.

The amount of floor space already engaged is greater than last year, so the managers say the exhibits will be much more attractive, and a move-

ment is under way to show all exhibits of machinery in operation under actual working conditions as they would be found in the field. The products of the chemicals manufactured, and as they enter into the world's commerce, will be there as examples of what the chemist has produced in America since the world war began.

The South is again sending exhibits from some sections, and Canada, too, is taking the opportunity of presenting the materials it has available for development by the chemist and financier. Technical and business men over the country should give heed to these exhibits, since they will show how they can meet the war-time need. A section for the glass and ceramic industry has been added, with which the American Ceramic Society is cooperating.

The program for the exposition is in active preparation and will be a series of symposiums on the "Development of Chemical Industries in the United States, notably since July, 1914." This will embrace the period since the beginning of the European war, which, because of its removing the source of supply for our domestic industries inspired the development

of our own chemical industries that, now, when we ourselves have entered the war, are proving so efficient.

The program of motion pictures carries forward the idea of the symposiums, and pictures will be shown of the industries that have developed in so far as they can be with propriety.

Bulletin No. 1 to exhibitors, just issued, says:

"Our attention has many times been directed to exhibits that through just another little touch could be livened up so as to make them things of real human interest. This applies to machinery as well as chemical products and materials; of the former the management hopes and would request that exhibitors of machinery and chemical equipment show them in operation so far as facilities permit. Of chemical products and materials, their use in manufacture can be demonstrated by articles of commerce made therefrom, or indicated by suitable charts and cards.

Live exhibits such as these best serve the interests of the exhibitor.

"The big purpose of each exhibitor in the exposition is the purpose of the exposition to show the technical man in the field, who can supply, where and what kind of products he requires and wants.

"It is the ambition of the management to hold this as an exposition not intended for the souvenir hunter, and from experience would discourage the distribution of souvenirs; some do not wish to be burdened nor offend by refusing them, and, again, others may be offended by not being offered one. Their use is costly and not always productive of the desired results, and the competition between exhibitors to each year present a more attractive souvenir not only is costly but sometimes disastrous—and not always good business. We bespeak the cooperation of all our exhibitors in the abstention of these to uphold the dignity of the profession and its representative exposition.

"We are now preparing our program and would ask all our exhibitors possessing motion pictures of their industry or work to advise us what they are, title, number, length of reels, and if the films have suitable "leader" titles not necessitating an accompanying speaker, so that we may secure them if the program permits. Also kindly advise us if the films are distributed through the Bureau of Commercial Economics."

Lazard-Godchaux Extensions

The Lazard-Godchaux Co., Ltd., whose chief office is at 422 Strand, London, W.C. 2, have recently opened another branch at 15 Rue Sully, Lyon, France. This step has been rendered necessary by the increased demands of this very important market for dyes, intermediates, and other chemical products. The firm have also recently established a subsidiary company, trading as the Lazard-Godchaux Co. of the Far East, with offices at Shanghai, with the object of advancing the claims of English manufacturers and merchants to a share of the practically unlimited trade possibilities in dyes, chemical products, etc., of the Chinese and other Eastern markets. An adequate and specially trained staff has been secured in Shanghai, and their services will be gladly placed at the disposal of interested British traders, through the London offices of the parent company. This is an example of what American dyestuff manufacturers may be expected to undertake as the logical development of our growing export trade.

Federal Dyestuff Announcement

The receivers of the Federal Dyestuff and Chemical Corporation, of Kingsport, Tennessee, have made an announcement to the trade in which they point out the fact that every plant employee is American born. The list of dyes manufactured by the company includes sulphur colors for khakis and olive drabs, sulphur blue, direct colors including tans, alizarine red and blue, acid colors including a fast red.

The list of intermediates includes dinitrophenol, dinitrobenzol, dinitrochlorbenzol, nitrotoluol, dinitrotoluol, beta naphthol, monochlorbenzol and similar products. The company also produces caustic soda in 60 per cent., 62 per cent., 74 per cent. and 76 per cent. Liverpool test; muriatic acid, 18 degree and 20 degree Baume, with a daily capacity of 40,000 pounds.

Palatine Aniline and Chemical Corporation, Poughkeepsie, N. Y., manufacture coal products, tar and chemicals; capital, \$150,000. Incorporators, A. R. Mullaly, C. O. Terwilliger and D. DeForest, Herkimer, New York City.

AMERICAN DYESTUFF REPORTER

Published weekly by

HOWES PUBLISHING COMPANY

470 Fourth Avenue, New York

Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated.

A. P. HOWES, Editor and Publisher

The Reporter Changes Hands

WITH this issue of the AMERICAN DYESTUFF REPORTER the ownership of the magazine passes into new hands. A. P. Howes, who has for some years held the office of Vice-President of the Hewitt Publishing Corporation, former owners of the magazine, has severed his connections with the Hewitt organization and has purchased the REPORTER from them. Mr. Howes, doing business as the Howes Publishing Company, will hereafter assume entire financial and editorial responsibility for the publication of the magazine.

In acquiring the ownership of the REPORTER the present publisher was actuated by a very deep interest in the American dyestuff industry and a firm conviction that this newest of American industries had come to stay. While we believe that the publication of a properly representative periodical devoted to the American dyestuff industry ought eventually to prove lucrative, we are, for the moment, more especially concerned with what we believe to be a patriotic privilege. If our efforts are in any small degree helpful in establishing the domestic dyestuff industry on a permanent foundation and in eradicating the German dye ring from its firmly entrenched position, we shall feel fully compensated for the expenditure of our time and capital.

When entering upon a venture of this sort it is well to have before us certain definite principles by which to guide our course. We have accordingly prepared a set of policies, toward the furtherance of which we

will bend our efforts. These policies are set forth on the opposite page. While we realize that the full accomplishment of all that is here outlined is something which cannot be expected to mature over night, we, nevertheless, believe that consistent striving toward these ends will aid in some slight degree in the consummation of that which is, after all, our chief excuse for existence—the firm establishment of the American dyestuff industry upon the ruins of what was formerly a Teutonic monopoly.

The Tariff Amended

In our issue of last week there appeared, on page 6, a paragraph relative to the Tariff Commission's report on an investigation into the dyestuff situation. In this paragraph it was stated that one of the recommendations of the Commission had to do with concentrated dyes, which, it was claimed, because of their concentration, had avoided paying their proportionate amount of duty. On its face this proposition is, of course, ridiculous. As dye duties are assessed ad valorem, concentrated dyes are, it follows, valued at a price relative to their concentration and as such pay a proportionate duty.

Truthful Publicity

Elsewhere in this issue there is an article relative to the proposed association of dyestuff importers. It would seem to us that some of the hasty criticism of this association which has appeared in the daily press was, to say the least, ill-considered. There is no doubt that more or less irresponsible writings which have appeared in our media of general circulation in regard to the dyestuff industry have done more to perplex the general public than any other single evil of which we know. We earnestly recommend to our friends, the editors of daily newspapers and magazines of general circulation, that when treating of dyestuff matters they exercise caution and inform themselves fully of the facts before bursting into print.

In assuming control of the

American Dyestuff Reporter

the publisher announces the following

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- To devote the Reporter wholeheartedly to the development of a permanent domestic dyestuff industry in America.
- To advocate everything which will expedite this development and oppose everything which will retard it.
- To eradicate the widely held conviction among consumers and the general public that American dyes are at best "makeshifts."
- To expose and condemn everything in this industry which smacks of German propaganda.
- To stimulate co-operation and mutual helpfulness between manufacturers and consumers.
- To foster a spirit of tolerance on the part of consumers with the efforts which manufacturers are making to supply their needs.
- To advocate such tariff or other legislation as may be essential to the welfare of the industry.
- To encourage constructive co-operation and discourage destructive competition between manufacturers—both large and small.
- To make our circulation cover every field which consumes dyestuffs and to supply these consumers promptly with authentic information regarding the development of American colors and the most approved methods of their use.

THE PROPOSED DYESTUFF IMPORTERS' ASSOCIATION

Criticism of the Organization as Pro-German Unwarranted — Should Further American Interests

SINCE it was announced, about ten days ago, that certain large interests engaged in the importation of chemicals and dyestuffs were about to effect an organization for the furtherance of their mutual interests, there has appeared in the local press, notably in the Brooklyn "Standard Union" of June 27th, comment which represents this proposed association as pro-German and as essentially inimical to the American dyestuff industry.

A representative of the REPORTER has interviewed some of the gentlemen who are interested in this movement and has been privileged to examine a preliminary draft of their proposed by-laws. Our conversations and the by-laws themselves both lead

us to form the opinion that there is nothing in their proposed sphere of activities which is directed against the development of our domestic dyestuff industry, and their personnel, instead of being pro-German, is distinctly anti-German.

Some passages from the proposed by-laws which support us in this conviction are reprinted herewith. The objects of the association are given as being: "To cooperate with the Government and its constituted officers in all that pertains to the importation and selling of Dyestuffs, Chemicals, Dyewood and Tanning Extracts in the United States; to assist in the enforcement of laws, rules and regulations covering such importing and selling; to take up matters before the United States Tariff Committees whenever advisable or called upon; and to promote in general prompt and efficient compliance with the desires of the Government and its officials."

Under the heading of Import and Export Licenses the association is designed "to provide efficient service for our members on all matters pertaining to importations and exportations, including prompt adjustment of disputed questions or conditions that are not properly understood, and to keep our members advised of all matters where a change of rules may affect their interests or failure to comply therewith hamper the Government or its officials."

It is pointed out that a majority of the importers interested in the movement are representatives of Swiss or French manufacturers. The Swiss are, and for many years have been, the arch-enemies of the German dye clique. Several Swiss firms are now manufacturing rare and difficult colors most essential to the American

textile and other industries, the production of which has not as yet been undertaken in this country. The continuation of the importation of these colors under favorable circumstances, at least until such time as they shall have been perfected by American manufacturers, should prove a very effective antidote for German competition.

As for the essentially anti-German character of the proposed association it is noteworthy that at least one large importer of Swiss colors who had applied for membership was rejected by the others because of his suspected German affiliations, although nothing definite in this connection was known.

E. C. Klipstein, of A. Klipstein & Co., one of the proposed officers of the association, will be remembered as the author of "Civilization vs. Kultur," a booklet to which he gave nationwide distribution at his own expense and in which he exposed the essential barbarity and criminality of Prussian methods and ideas. Mr. Klip-

stein's ancestors have been good Americans since Revolutionary days, and there cannot be any question about his patriotism. As a mere matter of dollars and cents, Mr. Klipstein's personal investment in his dye-stuff plants at Custer City, Pa., Chrome, N. J., and South Charleston, W. Va., far outweighs any interest which he may have in promoting his Swiss connections.

Other importers who are interested in this association are, we believe, equally above reproach and would not under any circumstances lend their support to a movement which they believed would further the interests of the German dye ring.

AFTER TREATMENT OF SULPHUR DYES

By A. F. Musgrave

MANY dyers have had no previous experience with sulphur dyes, and have therefore had considerable difficulty in matching shades, the difficulty being due to the fact that sulphur dyes in general require after-treatments which are not necessary with the direct dyes. Every dyer who has had experience with sulphur dyes knows of the big change in shade which results after the goods are dried and have lain for some days. This change is due to a gradual oxidation of the dyestuff by the oxygen of the air, the dyestuff having been partly reduced by the reducing action of the sodium sulphide used in the dyeing. As the sulphur dyes are somewhat reduced in the dyebath, they resemble the vat dyes, although the color is not reduced to the same extent.

Oxidation of the Color

One purpose in after-treating is, therefore, to bring about a rapid oxidation of the color so that the goods may be matched to a sample, and remain in that shade. Cotton which has been dyed with sulphur dyes is also after-treated in order to increase the fastness to light and washing, to prevent damage to the fibres by the formation of free sulphuric acid, and also to soften the yarn and beautify the shade. The principal after-treatment is that given in order to oxidize the color so that the shade will not change further.

The following chemicals have been used in the after-treatment of these dyes:—Sodium perborate, sodium and hydrogen peroxides, bichromate of potash, copper sulphate, chloride of lime, bisulphite of soda, magnesium sulphate, zinc sulphate, acetic acid, alum, red prussiate of potash, diazotized para-nitraniline, acetate or formate of soda, soda ash, soap, or soap and olive oil. In addition to these chemical treatments, the goods are sometimes steamed in order to develop the shade.

Sulphur dyes may be roughly divided into two groups, those which suffer a big shade change on oxidation after dyeing and those which do not. In the first class are those sulphur blues which become reduced in the dyebath to a yellow or colorless compound, the blue color only being produced on exposure to the air or some other oxidizing influence after the dyeing. In this class of dyes, the color is not produced on the fibre until oxygen has played its part, while with the other group the oxidizing after the dyeing serves merely to brighten the shade. Sulphur blue in the dyebath colors the cotton light dull-yellow. When the material is taken out and hung in the air for some time, a blue develops. A sulphur-brown, which the writer has in mind colors the cotton a dull brown in the dyebath. When the material is taken out, rinsed, and oxidized, the shade is brightened to almost an orange. Another dye which the writer has in mind, and which is extensively used in the production of khaki color, changes very slightly redder on being oxidized.

Simple Oxidants

Sodium perborate, sodium and hydrogen peroxide play the part of simple oxidizing compounds, and are used for after-treatment simply because their action is much more rapid than the action of the oxygen of the air. Their use does not in any way increase the fastness of the dyed goods, while various authorities claim that an over-oxidation with these products results in lessened

fastness to washing. This may be true of some of these dyes, but cannot be true of all the sulphur dyes, as the writer has tested several, and found no difference in this respect. The use of the compounds mentioned does not in any way have any tendering action on the fibre, neither do they harshen it as do several of the other treatments. In after-treatment the following amounts should be sufficient:—Perborate, 1 per cent.; sodium peroxide, $\frac{1}{2}$ per cent.; hydrogen peroxide, 7 per cent.; and ammonia, 7 per cent. After-treatment at 120 deg. F. for twenty minutes.

Of these three, sodium perborate is perhaps the most handy to use, as it breaks up in solution into free oxygen and borax, which is a very mild alkali. In solution, sodium peroxide breaks up into free oxygen and caustic soda, but the amount of caustic soda thereby left on the yarn is very slight, and cannot have any other effect than to act as a preventive of the formation of free sulphuric acid, which would cause tendering. Hydrogen peroxide is not very stable, and requires the addition of an alkali to free its oxygen. Also, owing to its greater bulk, it is much more expensive for freight, cartage, etc., and is seldom used for this purpose where perborate or peroxide can be obtained.

Chloride of lime also has an oxidizing action, but it can be used on very few sulphur colors, as most of them are totally destroyed by its use. While it changes the shade on account of its oxidizing power the change is far greater than when oxidizing with perborate, and no doubt the chlorine enters into the dyestuff molecule to form an entirely new product.

Sulphur blacks when after-treated

with perborate or peroxide become considerably bluer and brighter, but when after-treated with chloride of lime are completely destroyed.

Bichromate of potash is often used on sulphur dyeings for its oxidizing action, but there is no doubt but that the chrome itself plays a part in the process, either by dulling the shade or by rendering the color faster to washing. Several browns which were after-treated, in one case with perborate and in the other case with chrome, invariably gave brighter results with perborate, although the oxidizing effect with chrome was almost as great.

Effect of Copper Sulphate

Copper sulphate is a very vigorous oxidizing agent, yet the shades produced by its use are much duller than those produced with perborate. Copper sulphate is especially liable to result in the formation of free sulphuric acid after the goods have been stored for some time. While copper sulphate in itself has this effect, yet

when used in combination with bichrome and acetic acid no tendering action occurs. Copper sulphate, aside from its oxidizing action, also probably has the effect of increasing the fastness of the dyed goods to light, although all authorities are not agreed on this point. The following recipes are suitable for after-treating with these products: 2 per cent. bichrome and 3 per cent. acetic acid, aftertreat at 140 deg. F. for 20 minutes, rinse and dry; or 1½ per cent. bichrome, 1½ per cent. copper sulphate and 3 per cent. acetic acid; aftertreat at 140 per cent. F. for 20 minutes, rinse and dry.

The acetic acid is added to the foregoing baths in order to prevent action between the chrome and copper sulphate, and also because it has been found that the action is better in acid baths. It would, of course, be permissible to use sulphuric acid in place of acetic, although such is not to be recommended owing to the danger of tendering cotton with this acid. Acetic acid in itself is often used to after-treat certain sulphur dyes, particularly the bright yellows. The action in this case is possibly a simple neutralization of the alkali left in the fibre from the dyeing, this alkali tends to redden the shade of the yellow.

Even after dyed goods have been after-treated with chrome, or with chrome and bluestone, they will still oxidize considerably more if treated with perborate. This statement may not hold true of all sulphur dyes, but the browns which the writer tested were very much changed on a further

oxidation with perborate. This would therefore tend to show that either the oxidation with perborate carried the shade considerably further than a simple air oxidation would do, or that the treatment with chrome and copper sulphate did not oxidize the dyeings to their fullest degree. It is the writer's opinion, however, that the after-treatment with perborate more nearly approaches the oxidation by the air than does that of chrome and copper sulphate. It is rather interesting to note that the dyeings oxidized with chloride of lime were not further changed with perborate, this result, of course, showing that the chloride of lime after-treatment was too strongly oxidizing.

Bisulphite of Soda

Bisulphite of soda is also used as an after-treating agent, but its action is much less than that of chrome. There are, however, a few dyes which are best after-treated with this agent. Zinc sulphate was used to after-treat several sulphur browns, and it was found that the shade in all cases became much greener and duller, and that on a further after-treatment with perborate the shade became very much redder and brighter. There are probably very few cases where the use of zinc sulphate offers any advantages, and the only cases in which it is an advantage is with certain of the sulphur blues. The action of iron salts was also tried, and it was found that a big shade change occurred, although the dyeings were considerably dulled at the same time. The

remarks as to the tendency of copper sulphate to tender also holds true of iron salts, and their use is not to be recommended. Alum caused very little shade change in the browns in question, and its use made the cotton very harsh. Red prussiate of potash reddened and brightened the shades somewhat, but its use seems to offer no advantages over the cheaper products. Diazotized para-nitraniline has the effect of yellowing certain sulphur browns, but this process is seldom used in practice.

Tendering

Many cases have been noted of goods which had been dyed with sulphur dyes having become tendered after being stored for some time. This fact has made some dyers, who do not understand the colors, rather nervous, but this tendering very seldom occurs, and can be so guarded against that it cannot occur. In the first place, the sulphide of soda which is used for the dyeing has no tendering action on cotton, it being only strongly alkaline in its nature, and everyone knows that alkalies do not tender cotton, except under certain conditions. Cotton dyed with sulphur dyes which has become tendered will invariably be found to contain a large percentage of free sulphuric acid which has produced the tendering. This tendering, or rather the formation of this free sulphuric acid, is probably due to a breaking up of sulphur dye while on the fibre, the sulphur which was therein contained being oxidized by the air to sulphuric acid. The formation of free sulphuric acid is very much accelerated if the goods are stored in a hot place.

Prevention of Tendering

The prevention of this fault lies in treating the cotton after dyeing with some reagent which will stay upon the fibre and react with the sulphuric acid as it is formed. Various chemicals are suitable for this purpose, the principal ones being acetate and formate of soda and soda ash. If cotton after being dyed with sulphur dyes is treated in a fresh cold bath with

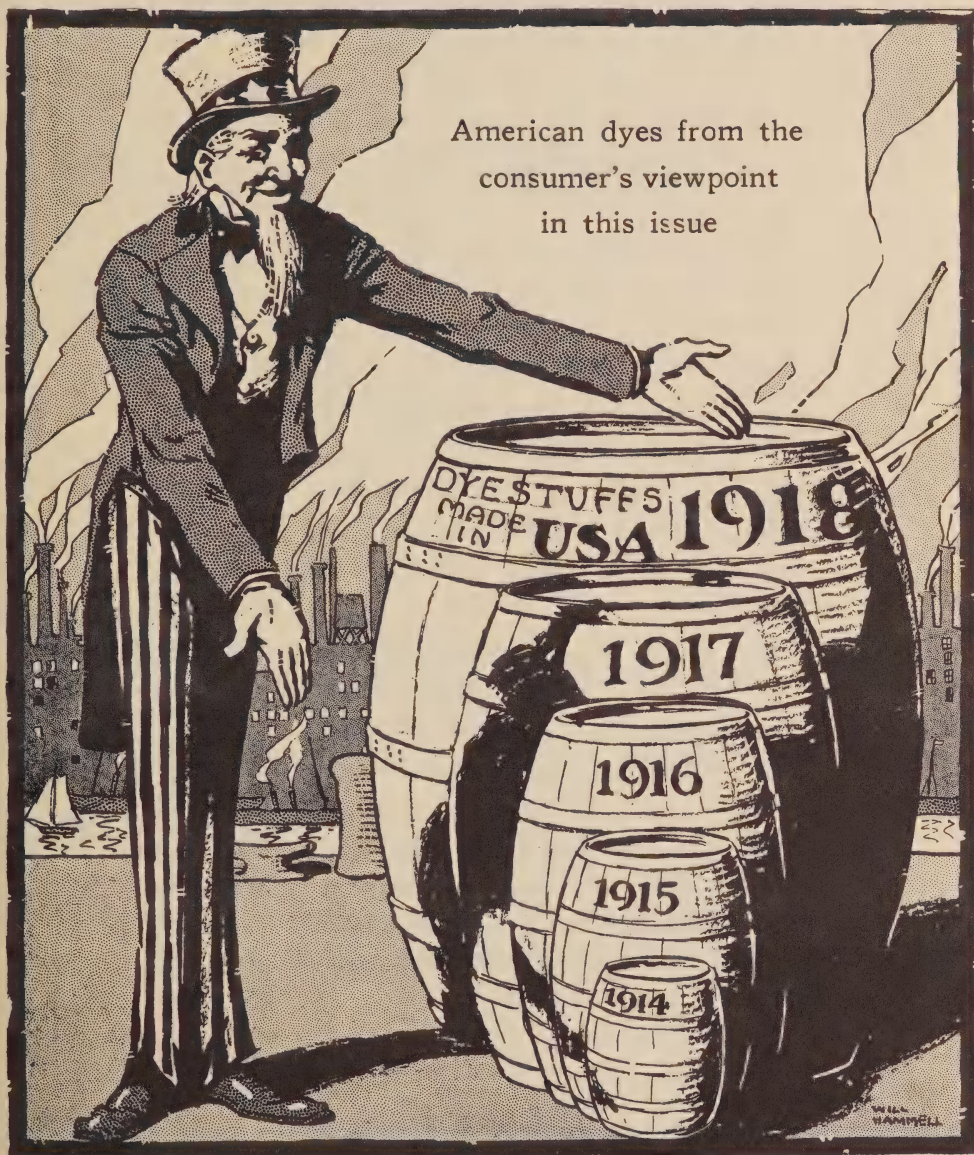
about 3 lbs. of one of these salts per 100 gallons of water, and then dried without further rinsing, it will not be affected even if free sulphuric acid should develop on the fibre as the sulphuric acid would be acted on by the sodium sulphate. The same effect could be produced by treating the cotton with an alkali, such as soda ash, in which case the acid would become neutralized with the formation of sodium sulphate and carbon dioxide gas. Probably the best process is to combine the soda ash with soap and olive oil, thus giving an alkaline treatment and a treatment which will soften the material at the same time.

AMERICAN DYESTUFF REPORTER

Vol. III

New York, July 8, 1918

No. 2



American dyes from the
consumer's viewpoint
in this issue

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Concerning Consumers

Straws Show that the Wind of Public Sentiment Is Blowing No Good to the Dye Industry at Present

STRAWS are frequently thought of in connection with bricks, drowning men and cooling drinks. They are also said to indicate whither the wind blows, and it is in this connection that they have been occupying the attention of the AMERICAN DYESTUFF REPORTER for the past few weeks.

An ubiquitous investigator connected with this publication determined to conduct an experiment calculated to throw into bold relief the determining factors which go to make up the present, up-to-the-minute attitude of the general American lay public toward the American dye industry of to-day. This sounds like a bold undertaking—and to some, no doubt, an impossible one. Whether or not it is possible to gain any accurate idea of this attitude by the methods employed will, it is expected, be the subject of more than one debate. But the experiment has been an interesting one, and belief in its accuracy is strengthened by the fact that its results check so closely with the impression already gained by those most intimately concerned with the dye industry.

The question of taking anything like a national census was immediately dismissed for obvious reasons. So also was the idea of canvassing the patrons of any particular department store. One of the aims of the experiment was

to keep subjects of it in ignorance of the fact that they were being interviewed with an eye to the compilation of statistics later on. The present article does not purport to be a collection of facts, but of beliefs. Its object is to stimulate the dye trade associations into further efforts to alter or modify certain lay beliefs about the industry, and to substitute entirely fresh beliefs in place of certain others.

By far the largest portion of dyestuffs consumed in this country are used in the textile industries. And it will readily be conceded that the great majority of purchasers of textiles in one form or another (speaking, of course, of ultimate consumers) who really care a great deal about the dyes employed and who are likely to devote much thought to the subject, are women. A man will often read to his wife a passage in the daily papers relative to the dye situation, but she, in turn, will tell him what she thinks about the subject from her own personal experiences. And it is from her that the man not engaged in or connected with the industry himself, will finally come to form his impression, nebulous and hazy though it may be.

Hence, for the purpose of obtaining a representative expression of the opinion of the public as a whole,

twenty-five women were carefully selected and interviewed under the following conditions. Each was, of course, a practiced shopper. Each was chosen with the purpose of making the whole body a typical cross-section of our present social structure as based on general education and experience, from "cellar to garret" and from side to side. In not one single instance did the questioned ones know they were talking for publication, being inveigled into expressing themselves under the guise of casual conversation. All were (we blush to say it) well past the "sweet young thing" period and well able to take an interest in practical affairs. Many, indeed, were self-supporting. They were, in all but three cases, unacquainted with one another, and lived in localities as far south as Georgia and as far west as Los Angeles. They consisted of housewives, women of means—and hence of leisure—stenographers, domestics of the better class, factory employees, business women, department store saleswomen, a department store buyer, and an advertising woman. Who shall say that the opinions of this array are not representative!

The general indications apparent upon reviewing the fruits of this fascinating research are that the present attitude of the public towards American dyes is still far from ideal. It is, in fact, rather worse than the writer expected to find it, and it emphasizes anew the necessity for more educational work calculated to change this attitude. The writer is aware of the difficulties, is aware that manufacturers still have their hands too full to do all in this respect that they would like to, and is further aware that really substantial progress has already been made—but on this experiment feels justified in basing

his belief that we have only made a beginning thus far.

The exhibit of the National Aniline & Chemical Company at the recent textile exposition is a striking example of what may be done. For general educational value and for convincing effect upon a large number of people, it has not been equalled by the effort of any other individual concern. Yet, just to illustrate how even such a clear and forceful piece of propaganda may sometimes fail of the desired effect, one of the Twenty-five accompanied the writer to the stand on which the dyed fabrics were displayed for comparison of American and German dyes, ran a practiced eye over the entire lot and triumphantly announced that it certainly showed the inferiority of American dyes, no matter what the company said! This was from an educated woman. We make it "Exhibit A" of this compendium, and pass along without further comment.

Two of the Twenty-five did not know that American dyes had as yet come into use in this country! They seemed pleased to learn this fact and asked when they might expect garments that would not run as much as some they had purchased recently. Both were well educated and well read. They were interviewed separately. We will label these cases "Exhibit B."

Fourteen out of the Twenty-five said in effect that they had often wondered how American dyes were "coming along" and why they couldn't be "sure" any more that the clothes they bought would not impart some of their varied hues to the underclothing and persons of the wearers. They apparently had a strong impression that once upon a time—before the war—they *could* be sure of this. They had not found much literature recently about the fastness of American colors in the consumer periodicals devoted to the particular interests of women. They had "gathered" that American colors were equal to German, but still, what good did such information do them when you couldn't depend on anything being fast. It was all very well to talk, but hadn't they the evidence of their senses? No, they

didn't believe that all the statements were lies, but . . .

Another—a buyer for a department store—appeared to be better informed than any of the others. She said that she had always known that some dyes were fast on one fabric and not on another, but that she hadn't known before that this was the reason for many of the complaints, although she might have readily comprehended this had it been called to her attention. What, then, was the sense of advertising that American and German colors were now practically equal if that fact didn't mean that one could guarantee the domestic dyes?

Four more declared they had thought "the whole thing was settled long ago," and that there was now "nothing to worry about." True, they had had some trouble once or twice within the past six months, but had heard that it would soon be over, as American dyes were now as good as any ever brought here from abroad, they had heard, and, of course, that was partly camouflage, but still, they had no doubt but that they soon would be. And anyway, we were now making even greater quantities of dyes than we used to buy, so, of course, the idea that some people had that there weren't enough to go 'round was absurd.

The remaining three expressed mild dissatisfaction with the dyes they had been sold—without guarantee—and hoped that some day things would be straightened out. They felt that in general the dyes were not so bad as they had been, and believed that the manufacturers of this country should be encouraged.

This completes the tabulation, and it is believed that the average of these opinions will be found to be the general opinion and belief of the average consumer. Little need be added. It is only a question of presenting facts—which has been done repeatedly—in a clearer form—which has *not* been done repeatedly.

On the whole, the spirit and patriotism of those interviewed was excellent. Confusion of mind was the principal trouble with most. In nearly every case

the information leading to this confusion was based principally upon superficial knowledge. Further questioning usually revealed that this "knowledge" was based upon hearsay and general gossip, which, in turn, was based upon information regarding American dyes, received either in person, or via shopping friends, from department store employees.

Practically all had read more or less on the subject, and in many cases the dissatisfaction felt appeared to result from disappointment. Hopes had been raised too high by headlines telling of the quantities and virtues of American dyes. In all cases these were the facts which had registered, and not the qualifying facts which would tend to explain cases of fugitive colors and the necessity for yet more patience.

The remedies are obvious: send more lucid literature to the women's magazines, and educate the department-store clerk.

NEW DU PONT OFFICE

To take care of the sale of dyestuffs in New York State northern New Jersey and western Connecticut, the sales department of E. I. du Pont de Nemours & Co., of Wilmington, Del., has opened a new office at 21 East 40th street, New York. E. V. Patterson, who for the last year has been in charge of the Charlotte, N. C., sales office of the company, will have charge of the new office and sales. Other units of the Du Pont corporation, the Du Pont Fabrikoid Co., Harrison Works and Arlington Co., will occupy the entire fourth floor of the same building. The Du Pont dyestuffs manufacturing department is now producing synthetic indigo on a large scale. The Du Pont Company in a recent statement says that this production "will soon be followed in a progressive way by the synthesis of other most difficult and valuable dye intermediates and dyestuffs in order to insure fully the independence of the United States from foreign products."

AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated.

A. P. HOWES, Editor and Publisher

Our Inquiry Department

The REPORTER in the past has endeavored to supply its readers with an information service designed to assist them in the solution of any technical difficulties which may have perplexed them. During recent months, because of considerable congestion in the offices from which the REPORTER was formerly published, many inquiries of this sort have not, we fear, received the attention to which they were entitled. For any shortcomings in this respect we apologize most sincerely.

From this time forward it will be our nearest endeavor to offer our readers every cooperation possible. We shall be very glad to receive your inquiries, of whatever nature, so long as they are related to the dyestuff industry, and will see to it that they are handled expeditiously by the persons affiliated with our organization best qualified to pass upon them.

The Tariff on Concentrated Dyes

THE REPORTER is in receipt of the following letter from Mr. McKerrow, of E. F. Drew & Co., Inc., which corrects, and quite rightly, a wrong impression which might have been gained from an editorial in our issue of July 1st.

To the last paragraph of Mr. McKerrow's letter, in which he says that he finds the trade press of the dyestuff field to be "muzzled," we take exception. We believe it is, in certain cases, true that papers do not care to give what might be called free expression to all sides of all situations, but we be-

lieve that this policy is, in most instances, dictated by what the editors honestly believe to be for the best interests of the industry—certainly we know that this is the case so far as the REPORTER is concerned. We shall, in every case, be most happy to give full and free publicity to every side of matters pertaining to the dyestuff industry unless we are convinced that some of the matter for which publicity is asked would be detrimental to the best interests of the industry as a whole.

After all, we must remember that the primal duty of American manufacturers and consumers of dyestuffs and those who serve them is to build up an American industry and to place it in a position so strong that it will be able effectually to resist renewed German onslaughts.

Mr. McKerrow's letter follows:

"New York, July 3rd, 1918.
 "Mr. A. P. Howes, Howes Publishing
 Co., 470 Fourth Ave., City.

"My dear Mr. Howes:

"1. The second editorial in your issue of July 1st is incorrect. If the duty on dyestuff was assessed on a purely ad valorem basis, what you say would be all right, but, as a matter of fact, the duty is assessed in two ways—30 per cent. ad valorem and 5 per cent. per pound specific. It is the second classification which enables the importers of concentrated dyes to evade a portion of the duty.

"2. For instance,—suppose a dye in its commercial strength is worth \$1.00 per pound; it pays 30 per cent. ad valorem and 5 per cent. per pound specific duty, making a total cost, duty paid, of \$1.35 per pound. If this dye is brought over in a concentrated form, say ten times the commercial standard, then, if it was honestly invoiced, it should be invoiced at \$10.00 per pound, and would carry 30 per cent. ad valorem, making \$13.00, but it would not pay any higher specific rate per pound than the unconcentrated dye, or 5c. per pound, making a total of \$13.05. Divide this by ten to bring it down to a parity with the commercial standard,

and this concentrated dye would be landed here, duty paid, for \$13.05, thus evading 4½c. per pound, as against the commercial standard.

"3. I trust this is clear to you.

"4. I am interested in noting the change in the management of the DYE-STUFF REPORTER, and wish you every success. You can only carry out the ideal principles you announce by refusing to be muzzled by your advertisers. Practically every trade paper to-day is so muzzled, and, therefore, a full and free exposition of the dyestuff situation cannot find expression in the columns of any trade publication that I know of; as a matter of fact, the American dyestuff industry is in a very critical and dangerous state, and there are certain phases of it which should receive public attention, but which have not done so with the exception of two articles which I wrote, and which were published in the *Christian Science Monitor* of June 4th and 8th. The *Christian Science Monitor* also had a strong editorial on the situation on June 13th.

"I remain,

"Yours faithfully,

"(Signed) H. G. McKERROW."

DYESTUFFS AT CHEMICAL EXPOSITION IN JAPAN

A chemical industries exhibition was held in Tokio towards the end of last year, and the display, according to H. M., Commercial Attaché at Yokohama, was quite a worthy one, and showed what great efforts are being put forward to make Japan as far as possible self-supplying as regards chemicals, attention naturally being paid, in the first instance, to those of industrial importance. Unfortunately, it was impossible to distinguish home from imported products, as there was nothing to indicate which products had been made in Japan. The most important chemical products displayed in the exhibition were (1) dyestuffs, (2) acetic acid, etc., and (3) dicalcium phosphate.

With its rich extent of forest land, Japan is favorably situated for the production of acetic acid, and this indus-

try seems to have come to stay. In 1912 there was an import of acetic acid into Japan valued at over £700; this has been transformed into an export of the value of £250,000 in the first nine months of 1917. The present abnormal demand for acetone for the manufacture of explosives will no doubt decline after the war, but the demand in other directions should more than compensate for this.—*Daily Commerce Reports*.

The Consumers Dyewood Products Corporation, with authorized capital of \$300,000, is building a plant near Mobile, Ala., on the Gulf, Mobile and Northern Railroad. G. A. La Vallee, president of the dyewood company, says they have chartered vessels to bring logwood from Haiti. The finished products are to be shipped to the Obex Company, Marietta, O., in which Mr. La Vallee is also interested.

The plant will cover ten acres. The capacity will be about 1,800 barrels of extract per month. Mr. La Vallee and G. P. Ward, assistant treasurer, will live in Mobile. The offices of the company remain in New York. By locating the plant at Mobile the company avoids transportation of the logwood sticks and consequent delays.—*Drug and Chemical Markets*.

A new company has been organized in Boston to manufacture dyestuffs, the organizers of which have been associated with F. E. Atteaux & Co., dyestuff dealers of that city. These men are Frederick E. Atteaux, John W. Linnehan, Louis L. Briden and Matthew Kinniburgh and associated with them is T. Terwellier, a chemist of New York City. The nominal capital of the company is \$150,000. A plant has been purchased at Poughkeepsie, N. Y., and several of its products are now on the market.

By boiling seaweed with carbonate of soda, and treating the filtered solution with sulphuric acid, a substance is produced that has more viscosity than starch or even gum arabic, and that can be profitably employed in stiffening various textile fabrics.

Why England Lost the Coal-Tar Color Industry

NEW light on the reason why England, home of the first coal-tar dye, allowed the industry to slip away from her and into the hands of Germany, was thrown in an interesting and original manner by R. E. Oldroyd, F.I.C., in a paper on "The Coal-Tar Color Industry" read before a recent meeting of the Lancashire Section of the Textile Institute, England. There have been many addresses delivered on this subject before, some of which have been given to readers of THE REPORTER, but few of which have equalled the following for frankness.

Aside from its unquestioned interest, the paper, which was printed in the *Journal of the Textile Institute* for May, 1918, is believed to contain a lesson which might not go amiss if applied on this side of the water. The paper follows:

In trying to understand how we lost the coal-tar color industry, one of the most difficult factors to reckon up fully, is the state of advancement in chemical knowledge at the various periods in the history of the industry. The industry, depending, as it has shown itself to do, on the science basis of organic chemistry, was indeed out ahead of the science, from the discovery of the first color in 1856 down to nearly 1870, from which period the science has guided and led the industry fully, and made of it a branch in the science of organic chemistry—perhaps at once the most fertile, the most interesting, almost, I might add, fascinating and useful branch to be found attached to any parent tree of science.

The year 1856 found us pre-eminent amongst nations as manufacturers of textiles—a position we had achieved by practice, and gradual improvement of certain fundamental inventions originating here, and backed also by an expert knowledge which our dyers had acquired in the application of the natural dyestuffs. It also found us with new gasworks in our large towns—gas-

works developed during the preceding 30 to 40 years—gradually becoming choked in development by the vast accumulations of the useless waste product, tar. No use could be found for the tar, and, consequently, it had no value; indeed, it had less than no value, it was a nuisance. Who would then have predicted that, ultimately, this so-called nuisance was to have a value exceeding that of the gas itself? Such, however, was to be the case, for in the year in question came the great discovery which was to give a new importance and value to the tar, and consequent cheapening and further development of the gas industry, and also to start forward the now gigantic industry in the manufacture of colors from coal-tar products. Perkin's mauve, discovered in the year named, must and will for all times stand out as the landmark from which the coal-tar color industry sprung.

When he made the great discovery which was to start forward a great industry, as, probably, you are all aware, Perkin was only 18 years of age, and still a student under the great Hofmann, who was Professor of Chemistry at the Royal College of Chemistry, London, and whose was, without question, the master-mind of the period in this branch of science. He and his students undoubtedly carried forward the early development of the industry, and it was he who started forward the work which ultimately placed the industry on a scientific basis.

Working under Hofmann, or elsewhere, at or about the period, we had Kekule, who was afterwards to place the industry on a real and secure foundation of science; Otto N. Witt, afterwards, perhaps, the captain of science who in this field had the training of probably more of the German army of chemists than any other man; Caro, who founded the great Badische Company; Martius, who did the same for the Berlin Aniline Company; A. Leon-

hardt, the founder of A. Leonhardt & Co., Mühlheim, and others. Yet we, the richest among the nations at the time, allowed them all to go to Germany.

These were the men who, without any doubt, built up the industry for Germany. We let them go, and now there are those who ask: "Why did we lose the industry?" Let us be honest, and at once state the truth. There can only be one answer—we did not want it to develop. From the selfish and narrowminded view we took of the position, we persuaded ourselves it was likely to hurt certain interests. Those interests had influences behind them sufficiently powerful to hinder the development, and were so egotistically blind as to imagine there was only one nation on the face of the earth at the period—England.

It is stated now, that "our education on this subject was, and always has been, poor." This is where we lose the proper perspective. We must remember there was little of real scientific knowledge of this subject at the period,

and therefore everyone's education was poor. When I remind the chemists present that the fundamental truth on which the understanding of the chemistry of the aromatic compounds depends, namely, the tetravalency of carbon, was not acknowledged and recognized, they will at once see how little real knowledge there could be on this subject at the period. Our general education in this particular branch was certainly in front of that of Germany, and for years afterwards we were the principal coal-tar color makers. Also, our education was just what we wanted to make of it.

After tracing developments following upon Perkin's mauve, the author proceeded to consider the reception of the new colors, and observed:

First, let us see how the dyers received these new colors. Our dyers, at that period, were indispensable to the continuance and development of the textile industries. The dyer's value depended on a knowledge of processes carried out from well-studied recipes, entirely his secret, to be handed down from father to son, or master-dyer to a high-premied apprentice. Many of these processes are well worth a study even to-day. The dyer, by a knowledge which was entirely his own, was indispensable. With the knowledge of our national conservatism of character before us, do you think it likely that the dyer would welcome the advent of colors calculated to remove, be it ever so little, his indispensability? Certainly not. The dyers, undoubtedly, were antagonistic to the development, and this antagonism continued for a great many years.

Now turn to the manufacturers, who have seen their businesses made into the solid success attained by the quality and coloring given to their materials by the natural dyestuffs, and which had become recognized and well known in the markets in which they were sold. Think once more of our national conservatism and antipathy to any change whilst holding a good thing. No, the general reception from this factor was not encouragement to aid the development. They were doing well, and, therefore, they wanted to let well alone. In one sense they acted rightly, as these, the first colors, although very bright and novel, were soon found to be fugitive; but the brightness gave a novelty which soon created a call for them, and although the manufacturers in general

showed no great appreciation, the national character then was not so very different to that of to-day. And, with eager suspicion, they watched their neighbors and competitors, to see if they introduced them; and when one of them found use for them, it was not long before others followed.

Turn now to another factor—the one with the greatest backing of influence in high quarters—the heavy chemical trade. At the period, this trade was simply coining money by supplying to the dyers the many heavy chemicals and wonderful mordants to fix the natural colors on the fibres. The new coal-tar colors, for wool and silk, did not require any of these high-priced fixing chemicals. Was it likely, then, that the heavy chemical manufacturer would welcome and help forward the development of this new industry, which promised for him the disturbance of his vast investments in the form of very remunerative capital? Certainly not. Some, however, of the large chemical manufacturers did go half-heartedly into the new manufacture, but they could never grasp the great probability that the new was likely to outstrip the old.

Therefore, the influence of the heavy chemical manufacturers was working strenuously against the new industry. This, backed by the opposition of the dyers and indifference of the textile manufacturers, lost us the coal-tar color industry, particularly when it was finally backed up by the crowning factor of all, which came from the short-sighted and selfish policy which soon actuated our first color-makers themselves. The colors, by their novelty and brightness, quickly compelled a demand which soon far exceeded the supply. To-day, it is difficult to realize what a great novelty they formed then. The first makers soon found they were in possession of veritable gold-mines, around which—figuratively speaking—they staked their claims, and did everything in their power to keep away other investigators and prospectors. In this attempt to keep other prospectors from working on and developing the principal gold-bearing seam of the period, namely, magenta, another factor—al-

ways detrimental to quick advancement—was introduced, namely, law, which thus early had the opportunity of investigating the possibility of this new gold-mine industry. The result was inevitable. The law has kept a watching brief for the industry, and incidentally for law, ever since, and you know what that means for the interest outside that of the law itself. And, since the war started, we have been very pointedly shown that only the law was considered capable of controlling this industry.

Hofmann was allowed to leave the Royal College of Chemistry in 1865, just when we must have realized what a profitable industry had sprung up in our midst, and which must then have shown that its development must depend on increase in knowledge of organic chemistry. But from that date extending through the most prosperous years of the industry we have known, down to 1874, when the Chair in Organic Chemistry was created for Schorlenner in Manchester, there was no Professor of Organic Chemistry in the country. It is a sad and distressing record. Could a full analysis be made of the several influences which brought about this state of affairs, I am afraid it would only bring out in bold relief some of the predominant and natural failings of our race. To Lancashire, however, is the credit for the first realization and admission of the sins of past omission, and the starting forward of the movement to remedy these by the creation of the Chair of Organic Chemistry in Manchester, at Owens College.

Now, I want very briefly to look at the few greater and more important dyes and groups of dyes, which came afterwards, and note economic mistakes we made; and then, briefly, to give a record of actual practical experience to prove the statements already made.

In 1868, the coloring matter of madder was made synthetically, in the laboratory, from anthracene obtained from coal-tar. It was a great discovery and offered great possibilities, as, in that year, roughly, one and a quarter million pounds sterling worth of madder was

imported for use in our dye and print works.

The laboratory method was, however, too costly. Perkin, again, had more to do with the discovery and working out of the commercial and practical method for the manufacture of this product than anyone. The changes from the raw product, anthracene, to the pure color, alizarine, were comparatively so simple and so cheaply done that, in a few years, madder was beaten out of existence.

For years we were the largest alizarine manufacturers. The German saw possibilities which, from lack of initiative and enterprise, we failed to grasp. On this account we allowed them to outstrip us and build up their vast concerns. Alizarine, and alizarine products, undoubtedly made for the rapid growth of the three largest firms—The Badische Co., Meister-Lucius and Bruning, and the Bayer Co. It is worth repeating that for years we were the largest makers of alizarine, and to point the moral—that when the war started

each of the firms named employed about 10,000 workers.

About ten years later, a new group of dyestuffs began to appear. This quickly impressed the whole dyeing industry with its importance, and it was destined to revolutionize, first wool and silk, and afterwards cotton dyeing, etc. This was the azo colors, called by this general term to indicate a certain internal general chemical formation peculiar to the whole group.

The discovery of this, the azo reaction, was made, again in England, in one of the laboratories attached to a brewery at Burton, by Peter Griess. Here, also, the first color was made. Griess, too, did much of the earlier research on this group of colors, but we allowed Germany to reap all the fruits of his labor, and by the development of this group take from us the lead we had hitherto held as a color making country.

It was now, more than ever, that we needed the research workers which we should have had if Hofmann and the others had been retained. A few of the earlier workers for us in this field, notably the late Professor Meldola and Sir W. Perkin, at this period pointed out the danger to our industries if Germany was allowed to get a complete monopoly of this key industry, and they asked of our legislators the necessary help to finance the development of research work and encouragement of the trade.

The azo colors were cheap. This appealed strongly to us, and we never considered that, whilst comparatively cheap to us, they still gave great profits to the German makers, who thus shared in the

profits of all the materials we made into which we introduced their colors.

The azo colors completely revolutionized, first wool dyeing, and, later, with the discovery of further intermediate bases, cotton dyeing. Not only dyeing, but, to a certain extent, manufacture was altered, as the properties of certain of the dyes were found to be different, and better in certain respects, to the natural colors they now supplanted largely. The dyes would stand different finishing methods, so new cloths entirely were made by taking advantage of these properties.

Then, as the azo color reaction became better understood, the dyers were actually called upon to make these colors on the fibre in the dyeing operation. England, again, through Messrs. Read Holliday's vacancine red, was the first to suggest paranitraniline red, the color most largely produced now in this way. It was afterwards found that many of the azo cotton colors could be changed by the dyer into other colors on the fibre, and the method—very useful to Lancashire—of diazotosing and developing of colors on the fibre was evolved.

Primuline, undoubtedly, was the dye which developed this useful process. It was discovered, again in England, by Professor Green when quite a young man, and when engaged as a chemist for the then most important color firm of Messrs. Brooke, Simpson and Spiller.

Let us see what Professor Green said about the first reception of primuline by the manufacturers and dyers. He said: "After the dye was ready for

commercial introduction, my firm decided to send me on a tour of introduction of the new product through the dyehouses of Lancashire and Yorkshire." He told of his reception at the various works, along with Mr. Wynter, their Lancashire representative. He said: "We received in Lancashire more cold water than anything else, and only a few firms, notably, Messrs. Worrall's, and Messrs. John Bright and Bros., of Rochdale, evinced much interest in the new dye."

Now, we come to the most serious side of the development. From some time which I place—by comparing side by side the advances in science and the industry—about the Jubilee Year, 1887, the German has undoubtedly seen a connection between color and explosive manufacture for war purposes, and has gradually worked with the end in view to acquire a complete monopoly of the chemicals and intermediates in which this connection was obvious.

When the sulphur group developed from 1893 onwards, our few English makers still left to us who had struggled on, with little encouragement, went more in for making this group, and gradually began to recover ground. Large quantities of sulphur black in particular were afterwards made here, constantly increasing in spite of the frantic efforts of the German makers, both by price-cutting, and the law courts, to stop the increase. The intermediate required for making this is nearly related to picric acid, and through it with lyddite, and melinite. This was probably more alarming to the German than the competition in the dye markets, since if we developed sulphur black manufacture we must also develop the making of a product available for war use at a moment's notice.

The last group of dyes I wish to mention, namely, the vat colors, was developing right up to the beginning of the war, and was materially changing Lancashire's manufacture. The vat colors resulted in one division, by the chemist changing the chemical indigo molecule, and, in the other section, the chemical alizarine molecule. This group of colors was to be the despair of our chemists, according to many of our

high authorities who had persuaded themselves that the German chemist was omnipotent. Our chemists were told by these authorities that they would not make the vat colors for indefinite years. What has been the result? Our chemists have thrown back the taunt by attacking this complicated group first, and with a great amount of success, and we already have our ranges of solvay, chloranthrene, and duranthrene dyes. Possibly, they have wished to show what they could do with the complicated colors, so as to create a confidence in what they will do for the simpler products when the opportunity comes by the release of chemicals and intermediates now used for war purposes.

Let us now, therefore, give to our chemists our wholehearted support. Remember, it is they who have saved the nation. Is it too much to expect them to save for us the color industry?

The color industry has shown itself to be far too dangerous a weapon to leave almost entirely in the hands of the German.

This brings me to the last point I want to make, and at the moment, perhaps, the most serious. I want to ask: How many have realized that capital invested within these islands can never enjoy that security it had in the past without the aid of unending research, yet to be done, and costing what it may? Capital always follows security. The very foundation of this security has been changed, and weakened for us, by chemical research bringing developments which have resulted in a complete change in the source of supply of the principal chemical essential for explosives manufacture, namely, nitric acid, the chemical by the manipulation of which Germany showed she intended to make war upon us; and we knew it, but deliberately blinded ourselves to the

consequences. The source of this almost entirely to everyone has hitherto been Chili saltpetre. We have still to depend on this source for our supply. Had Germany had to depend on this source, then our navy would already have ended the war. I think the serious position is rapidly being fully realized, for the "talk period" in regard to research for the making of synthetic nitrates, etc., is passed, and the work is being rapidly pushed forward. This is certain to develop. We dared not let it be otherwise; and we shall want to use this surplus nitric acid in peace times, and I am optimistic enough to prophecy we shall be able to find use for much of it in the coal-tar color works which will develop in our midst.

Apart from industrial security, we must for our very national safety have the color industry here, and I want to make this final appeal to you all, and to our Institute—to give whole-hearted support to efforts now being made, but as yet not quite so enthusiastically or so combinedly made as one could wish to see, for the regeneration of the color industry.

Researches connected with the indigo industry will be paid for out of the returns on a new export tax recently established on indigo in British India. According to the British "Board of Trade Journal," indigo produced in British India and exported to any port outside of British India, or to Aden, is subjected to cess at the rate of 1 rupee (\$0.3244) per maund of 82.27 pounds. Mixtures of indigo with other substances will be taxed on part of the total weight in a manner to be specified in later regulations. The passage of the indigo cess act, as the measure is called, took place on April 1.

IMPORTANT CHEMICALS UTILIZED IN BLEACHING, DYEING, AND CALICO PRINTING, THICKENINGS, ETC.

SULPHURIC acid is a thick, oily liquid without any color, but which at times is rendered brownish through the presence of small amounts of organic substances. For dyeing the ordinary commercial sulphuric acid, so called oil of vitriol, or D.V.O., is commonly used, which should contain 93-98 per cent. pure sulphuric acid anhydride, and is no longer used in dye houses. Sulphuric acid absorbs water from the air with great avidity, and should therefore be kept in closed vessels. On mixing with water it evolves great heat. In order to avoid dangerous heating up and spattering, sulphuric acid should always be diluted by being poured in a thin jet into a large quantity of cold water, stirring well all the time. The water should not be hot, nor should water ever be added to undiluted acid. Sulphuric acid diluted with half its weight of water does not become heated again severely. Sulphuric acid is sometimes used in place of hydrochloric acid for acidifying in bleaching and diazotising. As a rule it will be found that one part by weight of sulphuric acid will take the place of 2-2½ parts by weight of hydrochloric acid. The strength of sulphuric acid is determined by the hydrometer. Sulphuric acid 97.70 per cent. has the highest specific gravity, whilst that of stronger acid is slightly lower.

Hydrochloric, or muriatic, acid is met with commercially either as a colorless liquid, or colored greenish yellow by traces of iron. The commercial acid usually has a specific gravity of 26-28 deg. Tw., and is contaminated with iron, arsenic, sulphuric acid, and organic substances; for dyeing it is usually sufficiently pure. For Paranitraniline R it is best to use pure hydrochloric acid of 34-36 deg. Tw. Unlike sulphuric acid hydrochloric acid forms a freely soluble lime salt (calcium chloride), and is therefore to be preferred to sulphuric acid for souring off with a view to removing lime salts. In dyeing, hydrochloric acid is used for

the greatest variety of purposes, amongst others for preparing the diazotising baths, and for souring off in bleaching. The strength of hydrochloric acid is determined by twaddelling, and each degree twaddell indicates approximately one per cent. pure hydrochloric acid.

Copper sulphate, also known as blue vitriol, forms blue transparent crystals fairly soluble in water; 100 parts dissolve at

| | | | | | | | |
|---------------|-----|-----|------|------|------|------|-------|
| 50° | 68° | 86° | 122° | 158° | 194° | 212° | F. |
| 37 | 42 | 49 | 66 | 95 | 156 | 203 | parts |
| blue vitriol. | | | | | | | |

Bluestone is very largely used for the after treatment of Diamine, Immedial, and Hydron colors, sometimes alone, and then again together with potassium, or sodium bichromate; for Immedial colors it should always be used in combination with a bichromate. When using copper sulphate for the after-treatment the bath must not be turbid; this may easily be avoided by adding a sufficient amount of acetic acid. Copper sulphate improves to a very high degree the fastness to light of many colors, but not, however, of all colors.

Nickel sulphate, or sulphate of nickel, forms green crystals which are very freely soluble, and may be used in place of copper sulphate for the after-treatment of some of the Diamine and Immedial colors. Copper salts cannot be used in iron vessels on account of their action on the iron. Cobaltous Acetate consists of violet crystals which are very freely soluble, and may be applied for the same purpose as nickel sulphate.

Bleaching powder, or chloride of lime, is a white powder, smelling of chlorine, which should be free, it is well to particularly note, from any lumps. On exposure to the air it absorbs moisture and carbon dioxide, forming then a doughy mass. Mixed with a little water it evolves heat, and dissolves in 20 times its weight in water, a considerable residue always remaining. Chloride of lime should contain 35 to 40 per cent. active chlorine. It decomposes gradually when

stored; the decomposition may even take the nature of an explosion. For preparing a solution one part of bleaching powder is mixed to a perfectly smooth paste with three parts of water, and diluted with three parts more of water; after settling, the pure solution is diluted to the desired strength. Chloride of lime is used for bleaching purposes; it should always be used in a perfectly clear solution because any particles remaining undissolved and settling on the goods will tender them, or cause them to go weak in strength. In order to increase the effect of the chloride of lime the colored goods are exposed to the air so that the carbon dioxide of the air may bring about the full effect of the hypochlorous acid. The goods are further weakly soured off. After the treatment with chloride of lime, or after the souring off, the goods should always be thoroughly rinsed if necessary with the addition of an anticlor, such as sodium, thio-sulphate, or bisulphite. Hypochlorites and bleaching solutions (which contain hypochlorites) are determined in exactly the same manner as chloride of lime. The following method of testing the hypochlorite liquors in the bleach house has been proposed by R. Baur, and it is of much interest: For the titration of the bleaching liquors in use a "thiosulphate" burette graduated into 1-5 c.c., and a "chlorine tube" are required. The latter is a glass tube of about $1\frac{1}{2}$ c.m. (3-5 inch) width, and 50 c.m. (20 inches) length, closed at one end. Hydrochloric acid, potassium iodide, and a thiosulphate solution containing 6.95 grms. sodium thiosulphate

in one litre water are used for testing. This solution, each c.c. of which corresponds to 1 m.g. (0.001 grm.) of active chlorine, is filled into the "thio-sulphate burette." The "chlorine tube" is filled with 10 c.c. of the old chlorine liquor from the bleach house, and a few c.c. of a solution of potassium iodide are added until, on gently shaking, the liquor no longer becomes brown or turbid. When this point has been reached a few c.c. of hydrochloric acid are added until the turbid liquor has become quite clear (brown). The thio-sulphate solution is now added pretty quickly at first, and then drop by drop until the color which on moderately shaking had gradually turned a paler yellow suddenly disappears. Each c.c. of sodium thiosulphate solution added indicates 1 m.g. (0.001 grm.) of active chlorine in 10 c.c. of bleaching liquor.—*Textile American*.

Addition to Wetzel Staff

B. Franklin Lippold, who has for some time past had charge of the New York City sales department for Dicks, David Co., Inc., has severed his connection with that concern and on July 1st joined the force of Fred Wetzel & Co., Inc., with whom he will occupy a similar position. Mr. Lippold's addition to the Wetzel staff is in keeping with the progressive policy of this firm which has been rapidly enlarging its field of activities during the past year.

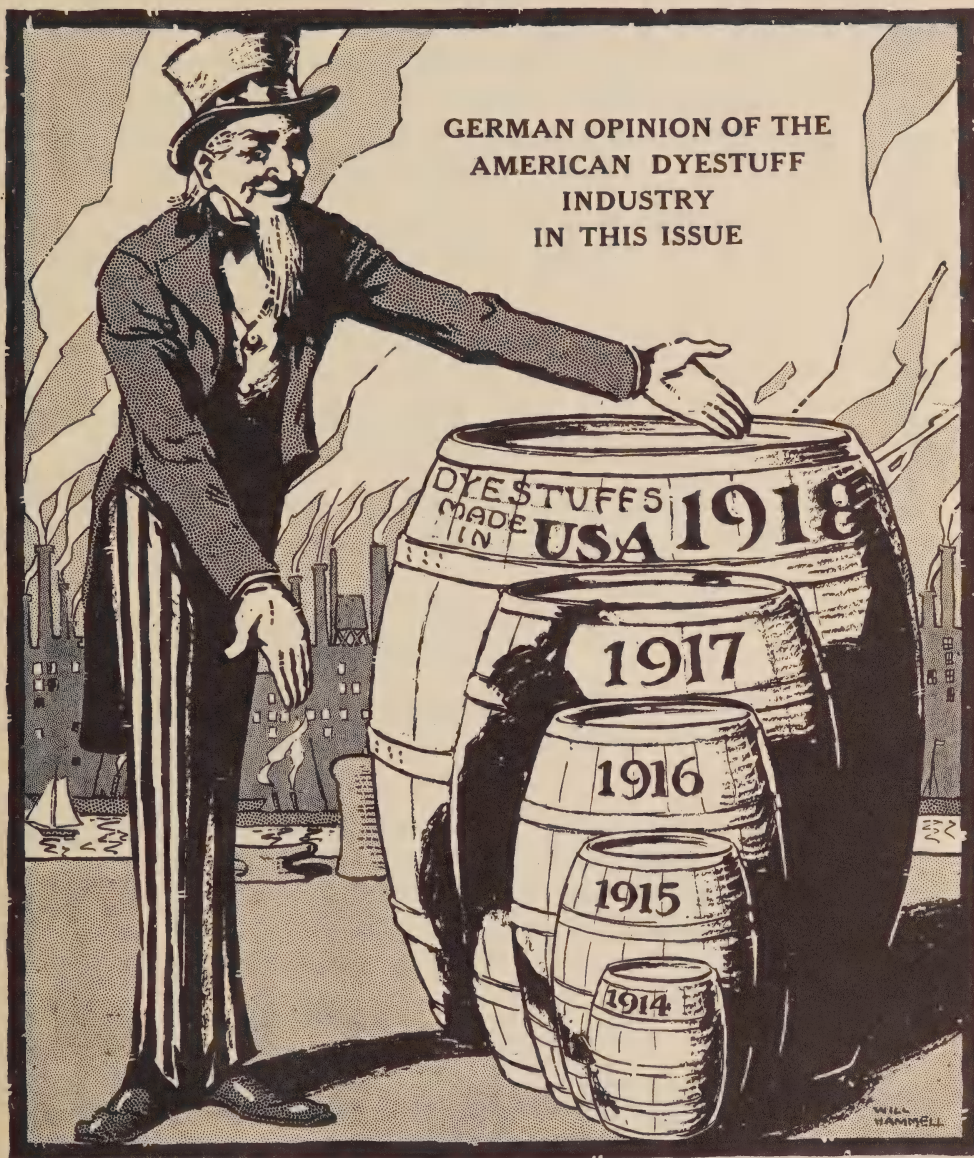
Evidences of activity on the part of English dye concerns is shown by the action of the directors of the Yorkshire Indigo Scarlet and Color Dyers Co., in calling a meeting to consider capitalizing £38,822 from the reserve and other accounts, and to add 50 per cent. to the value of preferred and ordinary shares.

AMERICAN DYESTUFF REPORTER

Vol. III

New York, July 15, 1918

No. 3



GERMAN OPINION OF THE
AMERICAN DYESTUFF
INDUSTRY
IN THIS ISSUE

THE
American Dyestuff Reporter

is devoted to the furtherance of the following

EDITORIAL POLICIES

- To devote the Reporter wholeheartedly to the development of a permanent domestic dyestuff industry in America.
- To advocate everything which will expedite this development and oppose everything which will retard it.
- To eradicate the widely held conviction among consumers and the general public that American dyes are at best "makeshifts."
- To expose and condemn everything in this industry which smacks of German propaganda.
- To stimulate co-operation and mutual helpfulness between manufacturers and consumers.
- To foster a spirit of tolerance on the part of consumers with the efforts which manufacturers are making to supply their needs.
- To advocate such tariff or other legislation as may be essential to the welfare of the industry.
- To encourage constructive co-operation and discourage destructive competition between manufacturers—both large and small.
- To make our circulation cover every field which consumes dyestuffs and to supply these consumers promptly with authentic information regarding the development of American colors and the most approved methods of their use.

AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, July 15, 1918

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"The Future May Be Regarded With Confidence"

SO SPEAK GERMANY'S DYE MANUFACTURERS AS THEY WATCH OUR EFFORTS TO ESTABLISH OUR OWN INDUSTRY—A REVIEW OF THE ASSETS OF BOTH SIDES

WHAT with the cost of living still plugging away determinedly at the altitude record and the hot weather coming on and this Von Hindenburg person making active preparations to launch a new drive, and one thing or another, one would almost think we had sufficient to keep us stirred up without being obliged to see some of our most cherished hopes dashed ruthlessly aside, and at the hands of those whom we had thought, from a commercial standpoint, at least, pretty well cowed and broken-spirited by this time.

It is the German color combine, no less, which has lifted up its voice after a long period of silence and crowed shrill defiance from the temporary security of the banks of the Rhine. In its annual report, after modestly calling attention to the comforting balance on the right side of its ledger, it proceeds to take note of those who at present have designs upon its very existence, in the following fashion:

"Owing to the length of the war, numerous competitive dye works have been established in neutral and enemy countries. A hard struggle with them is bound to come after the war. Sacri-

fices will undoubtedly have to be made; nevertheless, the future position may be regarded with confidence."

Yes, they really mean it. And what is more, an examination of the premises upon which they base their conclusions show them to be a vast deal nearer the truth than many of us care to admit, even to ourselves. It is, of course, well known that over a year ago six of the largest German dye producers, sensing the rapid expansion of the industry among its enemies, pooled their interests for the express purpose of reconquering, in time of peace, the territory now commercially lost to them. They will act as a unit, and the German genius for cooperative effort, for governmental direction of interests of a few for the benefit of many, is too well known to need further citation here. It would be a case of "coals to Newcastle," and any eloquence which might have been employed in trying to make this point any clearer will be saved up for the advent of the Fourth Liberty Loan.

Moreover, these powerful organizations have all been promised assistance from the Imperial government in their

project. It is all very well to say that there will be no Imperial government worthy the name—no serene Highness to tenderly protect the commercial welfare of his people—after the war, and pass smilingly along. We agree with this; there can be no peace while the Hohenzollern autocracy remains in the saddle and permits a flattered and grateful people to blindly accept its guidance, but after the house-cleaning has taken place, there will still be a German Government of some kind in place of the old, and it is a certainty that no clause calling for abandonment of the promised subsidies will ever find its way into the peace terms.

We see, then, that there is a quiet feeling of confidence regarding the dye future among the Germans which has not been shaken, and which seems to show no signs of weakening as time goes on and the coal-tar chemical industries of America, England, France, Switzerland, Japan and even Sweden, are beginning to assume definite shape. And this feeling is far from the vain-glorious, pompous self-love which we have, perhaps, grown to regard as part and parcel of German hopes and aims, and to look for in all their utterances. A man who is given to the practice of "bluffing" will continue to bluff until the last horn blows as long as the possibility of his being "called" means nothing worse than subsequent exposure as a common falsifier. But once let the possible consequences become such as to seriously threaten his pocket-book, and all pretence is abandoned.

Therefore, it is significant that the stock quotations of the "Big Six" continues to be exceptionally high, and shares in these companies are eagerly sought after. From the latest reports obtainable the "Badische" and "Bayer" stocks are quoted at 630, the "Hoechst" at 540, the "Actiengesellschaft" at 525,

the "Greisenheim-Elektron" at 470 and the "Weiler-Ter Meer" at 280.

From further information regarding these companies, it would appear that while earning exceptionally high profits, they are more securely entrenching themselves by the accumulation of huge reserves. An important factor will, of course, be the extent to which these reserves have been invested in government bonds, and the prospective value of these bonds when the war ceases. We can see no immediate reason why such investments should depreciate to any marked extent, even with the Hohenzollern dynasty discredited and facing Allied demands for a heavy indemnity, (although this would, indeed, be a wonderfully effective weapon with which to strike at Germany's coal-tar dye industry) for it is unlikely that the Allies will seek to bankrupt the country, provided that their other demands are met in a satisfactory manner. This belief is based on President Wilson's statement of our aims with respect to the German people, which, even though he gravely considers the possibility of a trade offensive aided by government co-operation, may be interpreted to mean that after effectually beating Germany and overthrowing the Hohenzollerns, we shall then seek to limit her trade from the outside rather than to utterly crush it from within.

Another reason for German confidence may be found in the oft repeated fact of the analogousness of the dye and explosives industries. One is ever potentially the other, and hence, with Germany at war, her equipment and ability for making dyes has grown in direct proportion with her advances in the art of making the wherewithal to blow her fellow creatures to kingdom come. It is true that during the closing months of 1914 and the early part of 1915 there was a decided set-back in the activity of all her establishments. From that time on, however, their capacity for production has been pushed to the utmost, and the conclusion of peace negotiations will see her at the top-notch of efficiency in this respect.

With all these factors on her side, plus a very early start on the rest of the world, Germany makes out an excellent case for herself. It pays to know these things, for to be forewarned is to be forearmed, and it is well to keep firmly in mind the reasons for Germany's continued confidence to win back her lost holdings.

Now let us turn to the opposite page of the account-book and see where we stand in the matter of items which will off-set the Teuton assets.

To begin with, the war has levied a heavy toll upon the rising generation of chemists in Germany, who would naturally form the investigators and inventors of the future. The continuity of research has, likewise, been most seriously interrupted, as the attention of trained experts has been diverted to other fields with more imperative claims upon their skill.

In addition, we are now more thoroughly awake to the necessity of building our coal-tar industries firmly for the future, and every month added to the time devoted to this finds us just that much more strongly situated. Protective measures will be taken, and, again referring to the President's statement, we find unmistakable evidences of a determination to thwart German methods of unfair competition which we allowed to flourish in the past. It is quite possible that some well-established precedents will go by the board in this connection, and we may look forward to some interesting developments in government direction, or, at least, interest, in connection with our industries.

Moreover, the advantages accruing to Germany through the steady employment of her dye works for the production of munitions holds equally true here—a fact that will be clearly revealed when the first census of the industry is taken after the war. Our young chemists in the universities, due to wisdom in the administration of the draft laws, has been kept off the battlefield and spurred to heroic endeavors along lines more advantageous to their country. It is well known that when a

young man graduates as a chemist and is immediately hustled into some other field of endeavor for a while, he is lost to chemistry for good and all. Our chemists constitute a powerful resource of the dye industry which we have carefully conserved, and in this respect we have fared much better than Germany.

We shall look, then, for help from Governments and committees, from scientific societies, from preferential and protective tariffs, from pure research in the universities, and from the increased knowledge born of our experience. Perhaps, in the end, our greatest asset will lie in the anti-German prejudice which will prevail for a long time after the war, and which no amount of artfully contrived propaganda will serve to diminish as long as the memory of Belgium, the Lusitania, Edith Cavell and so on through the bloody list, shall linger in the minds of men.

BRITISH DYES, LTD., AND LEVINSTEIN, LTD., TO UNITE

At last the long-expected amalgamation of the two huge English dye manufacturers, British Dyes, Ltd., and Levinstein, Ltd., has been agreed upon, and an outline of the terms upon which these two will join forces has been issued by the first-mentioned, which is at present enjoying a governmental subsidy. The following plan of amalgamation will be submitted for approval at a future meeting of "British Dyes":

The nominal capital of the new company to be decided when the ultimate figures are ascertained.

The capital to be divided into (a) non-cumulative 7 per cent. preference shares; (b) preferred ordinary shares; (c) deferred ordinary shares, both entitled to 8 per cent. dividend, and all remaining profits to be divisible ratably over the preferred and deferred ordinary shares.

The "substantial capital" of each concern is to be paid for by the purchasing company as to one-half thereof in preference shares and as to the remaining one-half in preferred ordinary shares. "Substantial capital" is taken to mean the actual value of the assets, exclusive of good will, minus the liabilities to be taken over by the purchasing company.

The value of land, buildings and plant owned by each company before the war is to be taken at a valuation to be agreed. All expenditure on such property subsequent to the outbreak of war at the value ascertained by negotiation with the government for the purpose of settling excess profits duty.

Stock is to be taken at the market prices current for the day.

Good will is to be paid in deferred ordinary shares by the new company in addition to the price ascertained as

the value of the "substantial assets" in the proportion of 55 per cent. to British Dyes and 45 per cent. to Levinstein. Comprised in the good will are the current contracts and also the benefits to be derived under the contracts of certain foreign manufacturers, which include large sums for information in respect of processes of manufacture, etc.

"AN INGLORIOUS ROUT"

Under the above heading Dr. Charles H. Herty in an editorial in a recent issue of the *Journal of Industrial and Engineering Chemistry*, again tells of the unnecessary and evil effects of blanket refusals to guarantee American dyes, and calls attention to the wholesome effect of the National Aniline & Chemical Company's recent graphic demonstration as follows:

"Among the many difficulties the new American dyestuff industry has had to overcome, none has been more nagging, more malicious, and less founded on fact than the prejudice engendered by the oft-heard phrase 'American dyes are not fast.' That this propaganda has been quietly and subtly promoted by those who wished to preserve for post-bellum days the American market for German dyestuffs has been understood by those who knew the facts. But the propagandists capitalized our national weakness for the 'imported' brand, and the one-time prevalent belief that the Germans possessed certain magical secrets which enabled them alone to make dyes worthy of confidence. Our good people of the trade fostered their designs by placarding their goods with such statements as 'The color of these goods cannot be guaranteed.'

"It was the old story of 'giving a good dog a bad name,' and against this propaganda counterstatements have proved of little avail. However, the poisonous slander received its effective antidote during the recent Textile Exposition in New York, in the clear, legitimate, and efficient demonstration by the National Aniline and Chemical Co., Inc., of the relative qualities of American and German dyestuffs. Comparative exhibits were made of fabrics

dyed with foreign and domestic products, and subsequently subjected to similar conditions approximating those of daily use. In this contest the American products fully held their own. To meet the possible criticism that the tests may not have been genuine, a dyestuff laboratory was installed, and there, upon request, comparative experiments were carried out before the eyes of the skeptical. Here, too, the results substantiated all that the most ardent advocate of the American industry had claimed. Now the press is doing its part in publishing these facts to the world. Another German drive has been stopped, and as the exhibit and laboratory travel to various cities it is safe to predict that the drive will be turned into an inglorious rout."

The Jones & Laughlin Steel Co., Pittsburgh, has awarded contract for the erection of a by-product coke plant that will have 300 ovens. The plant is to be complete in every respect, and will be equipped for the recovery of

ammonium sulphate, tar, benzol and toluol. According to reports the output of ammonium sulphate and pure toluol will be sold to the Government for war purposes.

The Indigo Cess Act of British India became effective on April 1, 1918. Indigo produced in British India and exported to any port outside of British India or to Aden is subject to cess at the rate of 1 rupee (\$0.3244) per maund of 82 2-7 pounds. Mixtures of indigo with other substances shall be taxed on part of the total weight, in a manner to be determined by later regulations. The returns of this tax are to be used for research connected with the indigo industry.

The National Aniline & Chemical Co. has plans under way for the construction of a six-story, reinforced concrete, brick and steel factory addition to the company's Buffalo works. The cost of the proposed addition is estimated at \$300,000.

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A. P. HOWES, Editor and Publisher

DISCREDITING AMERICAN DYES

At a recent meeting of the National Cloak, Suit & Skirt Manufacturers Association, held in Cleveland, the question of unsatisfactory dyestuffs came up for discussion. It was reported by several members that many garments had been returned by retailers during the past season on account of the colors used in dyeing the materials not proving fast. It was further stated that two large woolen mills had refused to bear any part of the loss entailed by these returns. The problem was discussed at some length and it was eventually decided that members of the Association would hereafter place on cards to be attached to all garments which they sold and also on all invoices a statement to the effect that the textile mills of the country were unwilling to guarantee colors and that it was, therefore, impossible for the garment manufacturers to do so. It was also recommended that retailers be advised to pass on this warning to consumers.

That so large an organization as the National Cloak, Suit & Skirt Manufacturers Association should take an attitude calculated to work so much harm to the American dyestuff industry is most deeply to be regretted. More than this, it is to be utterly condemned as being based on fundamental untruths and as being most highly unpatriotic.

The fact of the matter is well known to all who are familiar with the development of the American dyestuff industry to-day—that a great majority of shades for woolen and mixture dress goods can be produced equal in fast-

ness to those formerly imported. It is, of course, a fact that the selection of colors is by no means as varied as it was before the war but this lack is being remedied as fast as American chemists can solve the difficulties involved. There can be no doubt that dyestuffs of American manufacture are of a fastness equal to any normal commercial tests, and are available in sufficient variety, so that there is no occasion for any manufacturer to endeavor to shift the blame for the failure of his goods to meet requirements of fastness onto the dyestuff manufacturer. In practically every case where goods have proven lacking in fastness we believe that the difficulty lies with the dyer. This fact was well pointed out by John S. Boyd, of John S. Boyd Company, manufacturers of velvets, in a recent letter given to the trade press. In part Mr. Boyd said:

"There seems to be a sad misunderstanding regarding the dye situation in this country, and its relation to the garment trade, especially with regard to fastness of colors.

"In all my 25 years' experience with dyes of all types and their different uses and processes of manipulation, I am fully convinced that it is right up to the dyer principally, and this whole question of fastness is not so much the fault of the color manufacturers.

"It goes without saying that, during the last few years, we have not had the same opportunity of selection of dyes as formerly, because of the limited number of types of colors produced, but I might add that there has been a very material improvement in this respect during the past two years.

"Owing to the limited selection, it is, of course, a matter of the intelligence and skill of the dyer in producing results which he had hitherto attained, and some have no doubt been somewhat careless or rather have not been persistent enough in their research work, as to proper selection and source of supply.

"As stated above, however, there is every opportunity now to obtain the best of results and in the most unlimited number of shades. The color manu-

facturers of U. S. A. are certainly to be congratulated on the progress made in every branch of the industry.

"With the above explanation, I wish to take exception to the misleading statement that colors made in U. S. are not fast and cannot be guaranteed as fast, and especially do I consider it a very unwise move on the part of garment manufacturers to put cards on garments with the statement that manufacturers do not guarantee colors, as much injury to our American trade would be done by such a method of procedure.

"The garment manufacturers can today get their merchandise from sources where the colors will be guaranteed as fast as any dyed with foreign manufactured color. It all depends upon selecting the proper source of supply, just as it has been even more necessary for the dyer to be very careful of his source of supply in selection of dyes.

"Within a very short time, the U. S. A. will be absolutely independent of any foreign source of supply for all its colors and chemicals of any kind, and there will be soon an unlimited number of dyes for easy selection for all purposes. By this I mean, that whereas, now dyers have to be more skillful to manipulate the small range for selection to get all their results, this difficulty will soon change, and we shall have all the varieties and types we used heretofore with the same ease of selection for the most exacting purposes."

The action of the National Cloak, Suit & Skirt Manufacturers Association in voting to affix to the garments sold by its members tags discrediting American dyes is an example of the sort of thing which American dyestuff manufacturers must combat with every means at their disposal. We do not for a moment suppose that the action of this Association was prompted by German influence but it is undoubtedly a fact that if the German dye manufacturers were endeavoring to spread propaganda throughout the country detrimental to the American industry they could have found no better means to their end than in stimulating just exactly such actions as the one above

referred to. It would seem to us that the Dyestuff Manufacturers' Association, or some other properly accredited body, should see to it that no actions of this sort are allowed to pass unchallenged.

THE EVENING MAIL EXPOSÉ

The arrest of Dr. Edward A. Rumely, publisher of the *New York Mail* and the subsequent disclosures in regard to the German ownership of this paper unearthed by the District Attorney's office, give an illustration of what some believe is going on in the dyestuff field.

Since Dr. Rumely acquired possession of the *Mail* there have been repeated rumors of its essential German character but until the developments of last week nothing of a definite nature had been proven against this newspaper. There are in the dyestuff field to-day many firms which have, or have had in the past, more or less definite German affiliations. In practically every case it is now alleged that all relationships of this sort have been completely severed and that the concerns in question are American to the core.

In view of the disclosures concerning the *Mail* and in the light of many other similar affairs it would seem that the dyestuff consumers of the country who wish to aid the American industry would do well to exercise every precaution before patronizing firms against whom there may be the faintest suspicion of German taint. The increasing activities of the alien property custodian and of the district attorney's office will, no doubt, before many more months have passed make it possible to say, with a reasonable degree of assurance, which concerns are of an enemy alien character and which are not. In the meantime, however, all that a consumer who wishes to be on the safe side can do is to use every reasonable precaution and to view with suspicion all firms which are not unimpeachably American in character.

The capital of the Cassela Color Company, New York, has been reduced from \$150,000 to \$50,000.

THE INFLUENCE OF TEMPERATURE IN DYEING

By C. M. WHITTAKER, B.Sc.

CORRECT observation of temperature in modern dyeing is becoming a factor of ever-increasing importance. There are few branches of dyeing in which it does not play its part, while the constantly growing variety of union fabrics being introduced—consequent upon present wool restrictions—is impressing its importance upon dyers who have not had to bother with the dyeing of mixed fabrics until recently.

One of the first branches of dyeing in which temperature plays an important part is in the dyeing of khaki on wool with the help of Alizarine Brown M. This color falls out of solution below 100 deg. F., so that the dyebath on starting dyeing should never be below this temperature. It is a curious fact that if the color is allowed to fall out of solution it never gives the same color value as if the color had been kept in solution. Lack of observation of this important point has been the cause of widely varying shades dyed on the same class of wool with the same weights of color out of the same cask. On the attention of the dyer being called to the necessity of seeing that the dyebath never fell below 100 deg. F., the trouble automatically disappeared. A very good example of the utility of the thermometer in the dyehouse.

A detailed study of the rate of dyeing of direct cotton colors at varying temperatures is very instructive, and enables the dyer to choose the most suitable colors for dyeing artificial silk and mercerized cotton, since for these purposes colors that possess a good affinity at low temperatures are naturally the most suitable.

Chrysophenine G is an interesting

color from this point of view, because it dyes as full a shade at 100 deg. F. as it does at boil; moreover, the shade is equally fast to washing when dyed at this low temperature as when dyed at the boil. This goes to prove that the color actually dyes at this temperature and is not merely painted on. This fact marks out the color as most suitable for dyeing artificial silk and mercerized cotton. Were it not for the fact that it stains the wool at low temperatures it would also be admirable for filling up the cotton in union goods and for covering burls.

Chlorazol Fast Yellow B offers a complete contrast to Chrysophenine in that it has to be dyed at the boil to obtain the best value out of the color; moreover, shades dyed below the boil are not as fast to washing as those dyed at the boil.

Benzo Fast Orange S and Benzo Fast Scarlet 4 BS are interesting colors in that if the same percentage is dyed cold, 100 deg. F., 120 deg. F., 140 deg. F., 160 deg. F., 175 deg. F., 195 deg. F.,

and boil, the shade is very poor and thin until 175 deg. F., when the affinity for the fibre jumps in a remarkable way. These colors are therefore not very suitable for burl dyeing, though Benzo Fast Scarlet 4 BS has one good property from this point of view in that it leaves the wool unstained. Chlorazol Red A is a color like Chrysophenine in that it dyes as full a shade at 100 deg. F. as it does at the boil, whilst Chlorazol Fast Red 10 B must be dyed at the boil to get full value out of the color. Chlorazol Violet WBX is a color which dyes very well at low temperatures, having a good affinity at 100 deg. F., and so is very suitable for artificial silk, mercerized cotton, and burl dyeing. Chlorazol Violet BN, on the other hand, must be dyed at the boil to obtain its full color value. Ingrain Black 4 B (B H Black) is a color which gives good value at 100 deg. F., but not proportionately as good value as Chrysophenine. Sky Blue FF may be classed along with B H Blacks for good affinity at low temperatures. Benzopurpurine 4 B is a color which does not give good value until it is boiled.

Another point which these dye tests of direct cotton colors at different temperatures illustrate is that the shade of some colors varies according to the temperature at which it is dyed. Chlorazol Black E Extra is much redder in shade dyed at low temperatures than when dyed at the boil; moreover, the shade dyed at low temperatures is not as fast to light. Ingrain Black C is another color which is much redder at low temperatures. Sultan Scarlet F is

much yellower in shade when dyed at temperatures below 100 deg. F. than the shade obtained above these temperatures: the shade swings over from yellow to blue at 100 deg. F., whilst the fastness to washing is much poorer below 100 deg. F.

Another lesson may also be learned from dye tests on these lines. Such tests show very clearly the rate at which the individual colors dye on. It follows that colors which dye on at the same rate will, as a general rule, dye more level in compound shades than colors which dye on at widely varying temperatures.

Turning to the many branches of union dyeing, it will be found that the employment of the correct temperature is the keynote to successful results. Considering the dyeing of wool and silk mixtures it is extraordinary the range of temperature required to get solid shades on both fibres. In general terms it is usually correctly stated that at high temperatures the wool is dyed the heavier and that vice versa the silk is dyed the heavier at low temperatures. It follows, therefore, that there is a mean temperature with most colors at which both fibres will be dyed as nearly solid as it is possible to get them. Tartrazine gives a solid shade on wool and silk union at 100 deg. F., while at the boil the silk is practically undyed. Quinoline Yellow gives a solid shade at 140 deg. F. Cardinal Red J dyes at 100 deg. F., Acid Violet F dyes solid at the boil. Bordeaux B is best at 160 deg. F. Croceine Scarlet 3 B is solid at 175 deg. F. All these results are with acid colors dyed with sulphuric acid. When one considers the wide range of temperature required by the above colors it will readily be realized how difficult it is to select a range of acid colors which will dye wool and silk solid in

compound shades at the same temperature.

Turning to direct cotton colors, Chrysophenine, Chlorazol Brown G, Chlorazol Deep Brown B, Chlorazol Sky Blue FFS, Chlorazol Green G, Benzopurpurine 4 B all dye wool and silk solid at 195 deg. F. From which it will readily be gathered that it should be much easier to dye solid compound shades on wool and silk with direct cotton colors than with acid colors. This is actually the case, and the writer always uses direct cotton colors in preference to acid colors for dyeing wool and silk unions when the shade will permit; of course, with certain bright shades one is compelled to use acid colors.

Consequent upon the shortage of acid for carbonizing purposes burls are of much more frequent occurrence and consequent trouble than formerly. As a natural sequence the demand for colors suitable for burl dyeing is greater. The use of the correct temperature in burl dyeing is very important. If burl dyeing is carried out cold the wool is, of course, left the cleanest, but there are several colors available which will not appreciably stain the wool at temperatures as high as 100-120 deg. F. Such colors are Chlorazol Blue B, Afghan Yellow GX, Chlorazol Fast Yellow NX, Chlorazol Black E Extra for burl dyeing. It is really surprising what a difference in the depth of shade is obtained in burl dyeing by an increase in temperature of 20 deg. F. A great saving of dyestuff may be effected thereby, which is well worth effecting in these days of high color prices.

Chlorazol Black E Extra for burl dyeing is a good example of the advantage of higher temperatures in burl dyeing. A marked increase in depth of shade is obtained by burl dyeing at 100 deg. F. than cold, while the addition of soda ash is also very beneficial in getting value out of the color. A warning must be given against taking the temperature too high, because that would be false economy, as the color would stain the wool too much.

The maintenance of the correct temperature is also of the highest importance in the dyeing of vat colors. If the correct temperature is not observed one is certain to get very poor results. It is very instructive to make comparative dyeings of the same percentage of Chloranthrene Blue BD when the effect of temperature is strikingly demonstrated. If 10 per cent. Chloranthrene Blue BD is dyed at 140 deg. F. (the correct temperature), 160 deg. F., 175 deg. F., 195 deg. F. with the same amount of caustic soda and hydrosulphite pdr. conc., the dyeings being subsequently soured and soaped together in order to have the conditions identical, it will be found on examination of the dye tests that the shade dyed at 140 deg. F. is the best, with a progressive deterioration of the shade both in beauty and depth as the temperature of the dyebath increases, till the one dyed at the boil is very much greyer and duller in tone and at least 50 per cent. weaker than the shade dyed at 140 deg. F. These experiments illustrate in a very striking manner the effect of temperature in the dyeing of vat colors.—*Dyer and Calico Printer.*

NATIONAL SULPHUR BLUE L

This is the latest addition to the series of Sulphur Blues now being manufactured by the National Aniline & Chemical Company, Inc., and places in the hands of dyers a product possessing considerable brilliancy.

This new blue is applied to cotton in the usual manner. Dyeing proceeds uniformly at a temperature of 140° F. The dye bath is charged with a quantity of the dyestuff necessary for the desired shade, together with an equal weight of sodium sulphide concentrated, and also 3 to 5 per cent. of soda ash, and 15 per cent. of Common Salt. Complete reduction of the dyestuff in the bath is noted when the color of the solution changes to a reddish-gray.

National Sulphur Blue L is advantageously aftertreated with metallic salts, which are applied in a separate bath. Those recommended, with this mode of application, are bichromate of soda and acetic acid which slightly reddens the shade. Sulphate of copper (bluestone) and acetic acid dulls the shade, while a combination of bichromate of soda, bluestone and acetic acid produces a shade which is an intermediate between those which are produced with the metallic salts used singly.

Fastness of the dyeings produced with this new type of blue is very good; to *light*, it is very satisfactory and will answer for nearly all requirements; to *ordinary washing*, the shades are excellent, but under the influence of hard washing, the shade loses slightly al-

though both cotton and wool remain unstained; to *cross-dyeing*, the shade does not lose in depth, but is made slightly duller, but white wool and cotton remain quite clear. The dyed shades are particularly fast to hard fulling.

On the whole, it is a most satisfactory dyestuff, and will be found to meet the requirements of cotton dyers who have been in need of a fast bright blue of this type.

Dyers interested will, upon request to the National Aniline & Chemical Co., be supplied with full working details, with product sample, and sample dyeings.

THREE FLOORS ONLY FOR CHEMICAL EXPOSITION

The permanent slogan adopted by the managers of the Fourth National Exposition of Chemical Industries: "Expositions are the timekeepers of progress," has taken on an added significance for us since it was first uttered by President McKinley. And the progress of our chemical industries during the entire year, when graphically demonstrated in its entirety next September, will, we venture to predict, be something to startle even those who have been in close touch with one or more phases of it.

If P. T. Barnum were alive to-day he would find out his public no longer delighted in being "fooled." A change has taken place, due in large measure to the sobering effect of a world-wide and bloody struggle against those who would make the world *Hunsafe* for democracy, which would undoubtedly cause the great showman to rub his eyes. And for this reason, educational events of the character of the Chemical Exposition have now become as much of an institution among us as our elections, taxes or daily papers.

There is but little to add as yet to the plans announced in THE REPORTER last week. Of paramount importance to exhibitors, however, is the news that the management unexpectedly finds itself unable to secure the fourth floor of the Grand Central Palace to be a part of the exposition, as originally in-

tended. As there are but few spaces left, this will probably mean that a large number of those who intended to exhibit will be disappointed. Nevertheless, the approaching show will still be larger than that of last year, when a number of booths on the third floor were untenanted.

The motion-picture and conference hall will be located at the extreme rear of the third floor. The program of motion pictures to be presented is expected to furnish several surprises, although it is not in final shape for a detailed announcement. However, it is rumored that two or three of the largest exhibitors are laying plans for some unusual "stunts" in the shape of films especially prepared for first run at the exposition. The nature of these is being kept secret until they are completed.

Specific subjects to be dealt with in the general motion-picture program, the titles of which are to be announced later, will be Potash, General Chemical Engineering, Acids, including nitric and sulphuric; the Ceramic industries and, possibly, the Metal industries. Special groups of pictures will also be shown portraying in detail such subjects as recent progress in the development and application of our water-power, carelessness in the industries, with its attendant destruction of life, wealth and resources, recent progress in the oil industries, etc.

THE ELECTRICAL THEORY OF DYEING

At a recent meeting of the West Riding Section of the Society of Dyers and Colorists, which was held in Bradford, England, a discussion on "Theories of Dyeing" was opened by Wm. Harrison, M.Sc., of Leeds University.

There are three main theories—the chemical, the mechanical, and the electrical—and Mr. Harrison strongly favors the last-named. The chemical theory, he said, assumed that the fibres of wool, silk, or cotton formed chemical compounds with the dyestuffs. In support of this theory, Knecht proved that dyestuffs of homologous series were absorbed by wool in proportion to their

molecular weights, but no evidence had been put forward in favor of applying the theory to cotton dyeing. The mechanical theory was based on the observation that substances of an indifferent nature, such as glass beads and quartz powder, could be dyed to a small extent. Of these examples an explanation was afforded by the electrical theory. The surface tension theory had been shown to be untenable by Lewis ("Phil. Mag.," 15/6, 499, 1908). In the electrical theory (compare Harrison, "Jour. Soc. Dyers and Colorists," December, 1911) four factors were taken into account: (a) The molecular movement of the dye particles; (b) the electrical charge on the dye and on the fibre; (c) the surface of the fibre, including that within its pores; (d) the size of the dye particles. The rate of dyeing was governed by the first two of these factors; the total absorption of dye by the last two.

In the discussion following the paper, the author further pointed out that the electrical theory is not opposed to the chemical, but that it provides explana-

tions where the purely chemical theory fails to do so. While, he said, it was quite easy to offer a chemical explanation for the liberation of hydrochloride acid from sodium chloride by cotton and by quartz, on the assumption that these bodies possess faintly acid properties, it was difficult to explain chemically why all negatively charged colloids produced the same effect—for example, paraffin wax and colloidal gold. If chemists were prepared to admit that all these bodies could combine with sodium to form sodium compounds, then the chemical theory would become identical with the electrical theory.

NOTES OF THE TRADE

According to a recent report from Java, a great scarcity of all kinds of dyestuffs exists there.

Charles E. Lefevre has become associated with H. Carroll Brooke in the management and operation of the Edgewater Dye and Finishing Works, Philadelphia, Pa. Mr. Lefevre was

formerly connected with the Millville Manufacturing Co., another Quaker City concern.

R. M. Williams, General Manager of the Hellenic Chemical & Color Co., Inc., advises us that his concern recently negotiated four deals involving over 100 carloads of caustic soda. In addition to Mr. Williams, the staff of the Hellenic Company now includes I. J. Hawtof, as head of the Chemical Department; J. Russo, in charge of the manufacture of dry colors; and E. Feuer and E. Garretson, who are in charge of aniline colors.

Evidently unwilling to wait for the close of the war before beginning the final overthrow of German supremacy in the coal-tar chemical industries, Allied airmen recently bombed—among other things—the plant of the “Badische Anilin und Soda Fabrik” on the banks of the Rhine. This, of course, does not balance the score for one single hospital or Red Cross station, but we have the satisfaction of knowing that our aviators operated with such telling effect that a portion of the works caught fire and blazed merrily for several hours.

Interest is being manifested by the Canadian dye trade in the decision of Hiram Walker & Sons, distillers, Walkerville, Ontario, to manufacture aniline and other dyes. The firm is planning the erection of a \$1,000,000 plant on the Sandwich River, while at Walkerville a factory will be built to manufacture toluol.

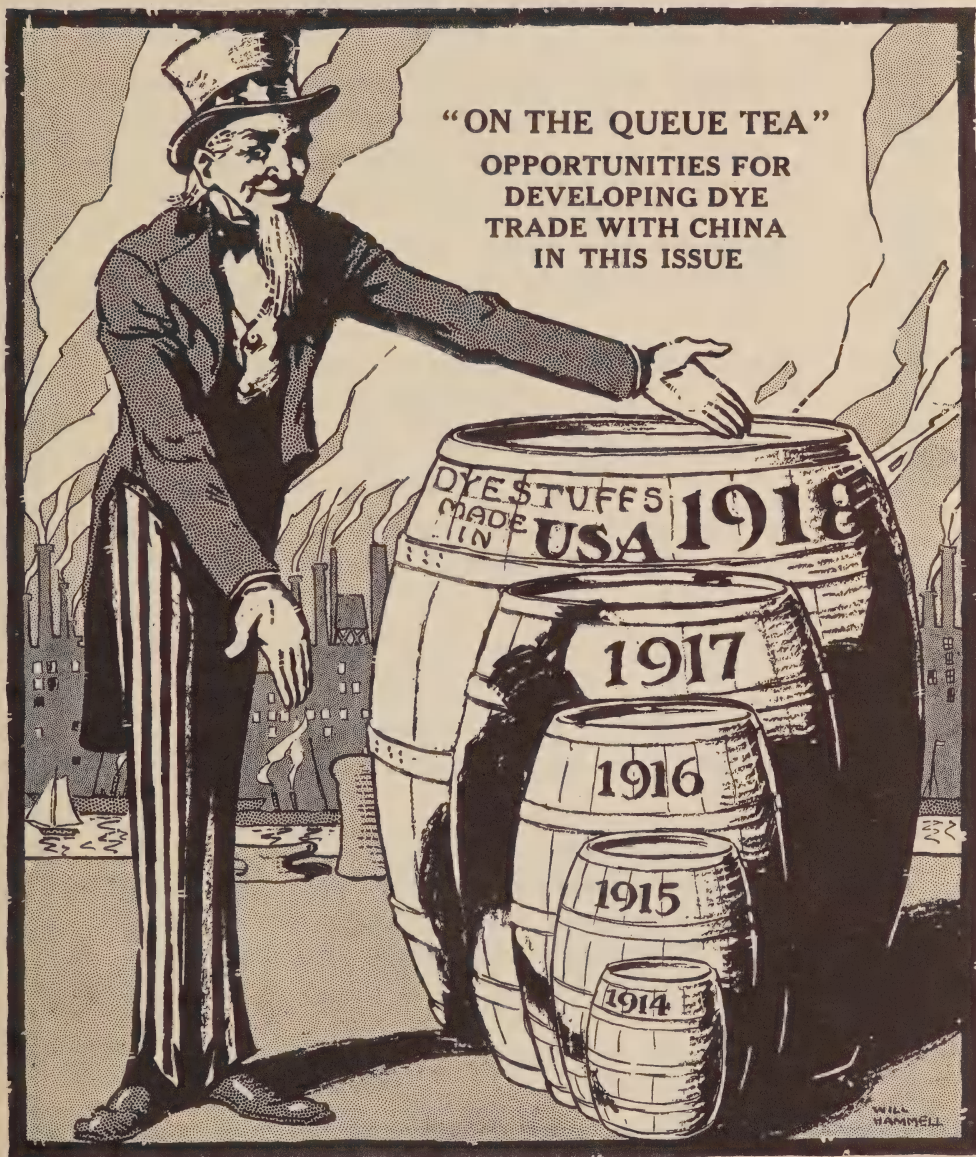
The J. H. & C. K. Eagle Co., Paterson, N. J., are preparing to increase their facilities for dyeing and finishing.

AMERICAN DYESTUFF REPORTER

Vol. III

New York, July 22, 1918

No. 4



THE American Dyestuff Reporter

is devoted to the furtherance of the following
EDITORIAL POLICIES

- To devote the Reporter wholeheartedly to the development of a permanent domestic dyestuff industry in America.
- To advocate everything which will expedite this development and oppose everything which will retard it.
- To eradicate the widely held conviction among consumers and the general public that American dyes are at best "makeshifts."
- To expose and condemn everything in this industry which smacks of German propaganda.
- To stimulate co-operation and mutual helpfulness between manufacturers and consumers.
- To foster a spirit of tolerance on the part of consumers with the efforts which manufacturers are making to supply their needs.
- To advocate such tariff or other legislation as may be essential to the welfare of the industry.
- To encourage constructive co-operation and discourage destructive competition between manufacturers—both large and small.
- To make our circulation cover every field which consumes dyestuffs and to supply these consumers promptly with authentic information regarding the development of American colors and the most approved methods of their use.

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DYESTUFFS, COLORS and ALLIED CHEMICALS

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"ON THE QUEUE TEA"

"Which, for ways that are dark and for tricks that are vain, the heathen Chinese is peculiar."—BRET HARTE.

THE CHINESE DYE TRADE IS DISTINCTLY WORTH GOING AFTER, BUT AMERICAN MANUFACTURERS WILL HAVE MANY BIZARRE NOTIONS TO PROPITIATE BEFORE THEY CAN REAP THEIR REWARD.

ALTHOUGH some doubts are being felt by American dyestuff manufacturers as to whether or not this trade will continue after the war, it is reported that for the present, at least, a very considerable trade in dyestuffs is now being carried on with inhabitants of South China.

The dye business, as carried on in China, differs greatly from the methods which obtain here, where dyes can be purchased in open market on the basis of quality. No such market exists in China. Trained to use native dyes, the Chinese dyer has to be trained to use foreign ones, and these he can identify in future only by the trade-mark under which they were introduced to him. The market is great, but it requires special methods of approach.

A great number of firms in the business are English, and these, while having no prejudice against American dyes, naturally prefer to handle British products. Before the war, however, practically all the dyes on the Chinese market were of German manufacture. The real secret of German success with the Chinese lay as much in their plan of merchandising as in their methods of manufacture. The Teutonic firms

always kept a large stock of dyes in all the dye-distributing centers of China, and all sales were made on a commission basis, all stock and risks being borne by the firm, which also stood ready to tide the agent over bad seasons, fluctuations in prices, etc. Moreover, the German firms were ever ready to give financial aid to the dyeing establishments. All sales were made on a graduated system of rebates to agents in the shape of a bonus on the quantity consumed, and the services of trained dyers and demonstrators were always to be had by the dyeing establishments.

Although this manner of merchandising involved the tying up of enormous capital, yet so strong was the position and so effective was the organization of the German firms that they were able to do this and still make a tidy profit. For one thing, they were aided by the well-known attitude of the stockholders, who were often willing to wait patiently for years before being rewarded by the declaration of dividends. While, owing to differences in temperament, such a policy could hardly be expected to become popular in this country, yet, after all, it has proved

itself a sure winner, for which a suitable substitute has never yet been discovered.

To just what limits the Germans were willing to go in order to obtain and hold this trade may be better understood from a consideration of the reserve stocks of artificial dyes remaining in the land of Confucius at the outbreak of the war. When the exportation of German synthetic dyes ceased in 1915, there immediately ensued a most energetic hunt in out-of-the-way parts of the world for scattered stocks of colors, in the hope that the owners of these could be tempted to part with them at elevated prices. Considerable amounts were found in Central and South America, and in Mexico, but China proved to be the most productive field, and the quantity there secured was remarkably large.

At that time a report from our Consul-General at Shanghai gave an interesting picture of the general movement. According to this report, the declared exports of aniline dyes and indigo paste invoiced at the American consulate general at Shanghai during the years 1915 and 1916, and the first five months of 1917, were as follows: 1,505,083 pounds of aniline dyes, with a total value of \$2,428,234 were exported from that country, and 2,848,287 pounds of indigo paste, with a value of \$3,028,850, was also shipped out of the country, in exchange for the money of the "foreign devils."

All these dyes were of German origin, and the Chinese firms handling them cornered the market. The almost entire disappearance of these goods from the list of exports to the United States since early last year is accounted for only by the high rate of silver, resulting in increased gold prices, the excessive prices in local sil-

ver currency demanded by the Chinese merchants holding stocks, the prevailing high freight and insurance rates and lack of shipping space, and the heralded increase in the domestic production in the United States.

Germany succeeded in selling this difficult market against all competitors for years for several reasons, but the principal two were: (1) her products were at that time the best on the market in point of general merit, and (2) her merchants were willing to go to any limit in order to gratify the various whims and idiosyncracies—apparently trifling and absurd in some cases—of those to whom they sold. If the Chinese wanted all their dyes in blue cans ornamented with golden dragons or what not, and if those in other sections of the country had preferred theirs done up in white tissue paper with small pieces of celery affixed to the top of each package—why, that was exactly the way the Germans would offer it to them! This sounds amusing, but it is eloquently illustrative of the principle upon which the Germans captured the Chinese dye market, and everyone concedes that it was distinctly worth capturing. It was not the Teuton policy to "reason why"; it was enough for them to know what the Chinese wants were, and they went methodically to work to supply them. They were successful because they respected the Chinese traditions, never spoke slightly or made fun of them, and were always ready to offer whatever cooperation lay within their power. And elsewhere, as in South America, for instance, the results were the same.

Now China is turning to the United States for its supply of dyestuffs, and American color manufacturers are studying as never before the peculiarities of the Chinese trade. Sales of certain dyes have already reached respectable figures. There is no prejudice against American dyes, which are as acceptable and popular as any other unknown dyes—and practically all the dyes on the market are still unknown as compared with the German products imported before the war.

A representative of an American dye concern working in this market has sold there approximately half a million dollars worth of American dyes, and until stronger competition from Europe comes, will doubtless sell more. The trade is said to be reaching out for such products, and under normal conditions American-made dyes will have as good a chance in this field as any other dyes.

In the past, however, American manufacturers have not been disposed or able to meet the terms under which Chinese users of dyes were able to buy their materials, and the indications are that only by a complete grasp of the situation, viewed on a broad scale, will American exporters permanently succeed in the business. The trade is so large and the American manufacturer's opportunity is so exceptional at this time that it is sheer folly to consider the trade upon any other than a permanent basis.

The fact is, that the dye trade in the Far East (as measured by that of South China, at least) is one requiring large capital, thorough organization, and patient use of the highest merchandising ability. There is no other solution of the problem if we are to hold our own when the struggle comes.

Most American manufacturers would be disposed to bear, or at least, share, the burden of advertising and propaganda where contracts of purchase were such that they could receive the benefit of this advertising. Such benefit, however, hinges upon the establishing of recognized brands of dyes and upon a continuous and systematic sales system; for it is well-known that advertising without complete merchandising details is usually wasted effort. A sales system, in turn, involves the use of trained men, not only salesmen from the United States and the factory generally, but Chinese salesmen and experts trained in the use and sales of the products of a particular factory.

Such an organization, (assuming it is not possible to secure one ready made) represents years of effort and expenditure. In this the Hongkong importer cannot bear the burden alone.

Even if he is willing to advance the capital and brains to do the work, he can do it only under contracts which will later protect that work. In such lines of dyes and in such a field as China, this work is primarily the business of the manufacturer. After a manufacturer has established his goods there under his own "chops" or trade-marks, he can then sell in the open market, as American exporters generally wish to sell at the present time. He cannot do so in a permanent trade, however, until his goods are recognized. With the competition he will face after the war, the maker of dyes not known by a recognized "chop" will have no chance.

The firm of Geisenheimer & Company is about to reorganize under the title of Aniline Dyes & Chemicals, Inc. Full information in regard to the reorganized concern will be published in next week's issue of the REPORTER.

NEW PRINTED EFFECTS

BY a process patented by W. H. Albrecht, of Leeds (115,106) new effects are obtained in printed cloths of the type in which a pattern is produced upon a woven woollen or cotton fabric by a series of printings in colors which strongly contrast with a neutral color, so as to give them the appearance and lustre of highly finished woven cloths.

The object is to obtain or vary this effect by first weaving a fabric with an irregular or broken surface, then dyeing the fabric, and afterwards submitting it to a series or combination of printing operations in colors, which strongly contrast with the color of a neutral ground. In this way, an effective design is produced on a thin and durable woven fabric at a comparatively small cost of manufacture.

The fabric employed has a warp and a weft both of wool, or of cotton, or a warp of cotton and a weft of wool; for example, a cotton warp cloth woven, say, a basket weave—that is, say, a two and two, or a three and three twilled hopsack, or celtic, or crêpe weave, or a combination of weaves that will produce on its face side a number of small round or elongated protuberances. The cloth is then ground-dyed, or printed on one side with one or more neutral colors which absorb the light, and vary in shade and density in accordance with the final effect desired—and then printed successively in two colors with an irregular design of lines or dots, or zig-zag or other broken pattern, the colors strongly contrasting in luminosity, that is, capable of clearly reflecting the light, while the ground neutral color absorbs it. The fabric is steamed and again printed with a definite open-work close pattern in stripe or check in a deep-toned color, to allow the brilliant spots to show through

the spaces between the printed parts of the last named pattern as to disguise, tone down, and partly cover the previous spot, zig-zag, or other broken printing.

AN EXAMPLE

A gray cloth with a cotton warp is woven with a surface having an irregular or broken appearance, and which is produced by employing any of the recognized weaves that will give such a surface. Upon the broken-faced fabric thus produced a ground is dyed with one or more neutral colors, as, for example, fawn or brown. Although in the weave of the fabric it is desired to produce the broken order of interlacing, the warp and weft threads give to it a broken appearance, the dyed ground color requires to extend over the whole surface as an unbroken color.

Upon the broken-surfaced and ground-dyed fabric is printed in two printings an irregular design in a zig-zag or broken pattern, or with fine spots, the first printing being in a color which strongly contrasts in luminosity with the neutral dyed or printed ground color, or in a strong color possessing primary or secondary characteristics, such as a bright or other green—that is, a combination of blue and yellow; the second printing being of a similar design and in purple—red and blue—or with a yellow or an orange.

By a color strongly contrasting in luminosity is to be understood a color capable of clearly reflecting the light while the ground neutral color absorbs it. A strong color is one of the three primary colors, namely, prismatic blue, red, or yellow, or a strong color being one of or possessing the characteristics of the three secondary colors, such as purple, green, or orange. Experiments have shown that of these a strong-colored purple and a strong-colored green, or a strong-colored green alone are the best for obtaining the desired effect. The design requires to be small, so as to dazzle the eye, and it has been found in practice that a zig-zag design gives a better effect than dots or spots. The printing is done in the ordinary engraved roller color printing machine.

The fabric is steamed, and brought into a fit state to receive clearly the final printing in the next process. The usual steam pressure varies from 3 to 5 lbs., giving a temperature up to about 230 deg. F., which will usually be sufficient to achieve this object.

The fabric is then submitted to a main overprinting process, employing in this case such a deep-toned color as a brown, that will subdue to the desired extent the color of the first, second, and third printings, and at the same time produce the pattern and appearance aimed at. For this purpose it must be a definite open design—say, in stripe or check—with the spaces so large as to allow the brilliant dots or spots or small zig-zag marks of the previous printings to show through the unprinted spaces of the main overprinting, but the spaces must not be so large as to allow the eye to see them clearly and separately.

The overprinting is dark-brown intersecting lines, or any other pattern or color which will combine the whole of the previous printings into a design to produce the desired woven pattern effect on the cloth.

The fabric is then steamed and finished in the normal manner, as, say, for coating, or trousering, or dress fabrics.—*The Dyer and Calico Printer.*

should devote themselves to the task of manufacturing the products from which the dyes were made, the intermediate products, through the monopoly of which the Germans held the monopoly and control of the dye-making situation throughout the world, their belief being that unless they were able to solve this problem they would be left at the end of the war as dependent on Germany as they had been hitherto."

The correspondent insists that: "Prospective shareholders in the new company are entitled to know whether Dr. Levinstein, as technical managing director, intends to promote this policy, because if any other course is adopted the prospect of establishing an indigenous dye-making industry is gloomy."

The New York Color & Chemical Company will shortly remove from their present location at 212 Pearl Street to new quarters at 98 John Street where they will occupy the entire building of four floors.

WANTS LEVINSTEIN'S ATTITUDE TOWARD INTER-MEDIATES

A correspondent of the London *Financial Times* who signs himself "Shareholder," says among other things concerning the recent meeting of the "British Dyes, Ltd.," corporation at Huddersfield that "the discussion did not reveal the attitude of Messrs. Levinstein with regard to the manufacture of intermediate products; it was not stated whether the policy of that company has also been to develop the production of those materials on a large scale."

In the course of his speech, as reported in the Manchester *Guardian*, the chairman of British Dyes said: "The policy laid down at their first meeting, with the assent of all the large users whom they consulted, was that they

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A. P. HOWES, Editor and Publisher

**PUTTING THE CART BEFORE
THE HORSE**

Perhaps the chief cause of the difficulties which American fabric manufacturers have encountered in producing shades of satisfactory fastness with American dyestuffs is the fact that American garment manufacturers and retailers have demanded shades which were formerly produced by certain imported colors which are not now available in this market. The fact of the matter is that for many years new shades of dress goods and other fabrics were brought out after a dye which produced them had been developed. The public having become accustomed to these shades now require that they be produced by the use of substitutes which in the very nature of things cannot be as satisfactory as were colors from which the shade was originally developed and for which these colors were probably used exclusively. In other words, being given a certain dyestuff it is a simple matter to produce the shade for which this particular dyestuff is best suited but it is entirely another proposition to endeavor to produce the same shade by the use of substitute colors.

If the American public, particularly the sales people in department stores and specialty shops, could be made to appreciate this fact a great deal of the confusion which seems to exist in the public mind over the question of American dyestuffs would be obviated. It is an unquestioned fact that most staple colors are now being produced in this country which are in every way as satisfactory as those which were formerly

imported but it is equally true that certain of the rarer colors from which various mode shades were derived have not as yet been produced here and it is unreasonable to expect that the development of these shades can be satisfactorily accomplished by substitute processes. American manufacturers are bending every effort toward the development of as complete a line of colors as was formerly produced on the Continent and colors of this sort are constantly being successfully produced in this country but it will unquestionably be a matter of some time before a full line can be manufactured here and, until this time arrives, the American public ought to be educated to the fact that they cannot expect all the various shades to be available in all kinds of fabrics.

Japan Fosters Dye Making

Japan, like so many other countries, is striving to put herself in a position to be free of German domination in the dye industry after the war. As in so many other cases, this attempt at independence is based in the first instance on necessity. Prior to 1914 dyes to the value of three and a half millions of dollars were imported annually into Japan. Nearly all of this supply came from Germany.

With the outbreak of war Japan was compelled to take steps to protect her important silk and other textile industries, in which the matter of dyes is all essential. A law passed in 1915 provides for the grant of subsidies to companies engaged in the manufacture of dyes and chemicals provided that more than half of the capital of any such company be subscribed by Japanese subjects.

There is a report current to the effect that manufacturers of dyes and chemicals have been worried recently over the labor situation in the plants, which is said to be somewhat tense. However, the fact that government orders received by the mills are keeping the plants running full speed has served, in a measure, to relieve matters.

A SYSTEM OF COLOR CLASSIFICATION

BY E. W. PIERCE *

EVERYONE who has ever had work to do in connection with colors in the general sense of the word, as well as in the more restricted sense, meaning dyes and paints, has doubtless felt the need of a better understanding of their relations to each other. The writer long ago felt this need and endeavored to find a system of classification which would be applicable to daily work in connection with textile dyeing, art and the every-day application of color principles.

A search of the literature on the subject showed that much had been done along the lines of spectral colors by the researchers in physics, but none seemed to consider the regular colors, that form so great a part of our visible world, worthy of their serious thought. There were a few systems that might serve to teach children the elementary principles of color, but all contained wide gaps and left much unclassified. The demand was for a system of classification that would include all colors, tints and shades and show their relation to each other in such a way that the information could be used practically by a dyer, or anyone else who wished to build up compounds from simple elements.

The system outlined below is the logical conclusion of the investigations made in 1900 and modified during constant application of them since that time. While they can be criticized by the scientist as being partly imaginary, and by the practical man as being too complex, they have been of real use and may serve as a suggestion that will bring out something better.

KNOWLEDGE OF COLOR PRINCIPLES

Some digressions may be of help in arriving at the main point. There are three principal aspects to the subject of color—what a color really is, what a color seems to be, and how a color or a combination of colors affects us

mentally. In these respects colors very much resemble musical notes and chords, and as we find occasional musicians who know none of the theories of music, so we may find many artists, designers and dyers who exhibit a wonderful sense of color values and harmonies without being able to explain their mental processes. Just as a knowledge of music enhances one's enjoyment of the productions of the composers, so a knowledge of the principles of color and harmony will heighten our appreciation of anything whose charm lies in its colors.

The primitive races and semi-barbarous tribes of to-day delight in color combinations as crude as their music. We may hear persons, who should know better, go into ecstasies over the coloring of an Oriental rug that has the same degree of harmony and beauty as a Chinese or Turkish overture. This is done because it is considered proper to do so, particularly if the price of the rug is high. Now, many rugs from the East are of wonderful beauty of color and harmony, while others are nothing less than woven discords. If our color senses have been cultivated rightly we will not often make mistakes of that kind, but we will feel the pang caused by a color discord just as we feel an unpleasant sensation from a musical discord.

COLOR DEPENDS ON LIGHT

Objects perceived by the eye are visible only on account of their relative color values, and form and size are merely the boundaries of the color areas. Where its boundaries end we distinguish it from the space beyond by a change in color. We distinguish its form and size by the shadows, half tones and high lights that modify the general color of the object. No solid object has one uniform color at any time because color depends on illumination, and the light falling on the different parts is never entirely uniform. Each slight change in the angle of the illumination, due to the shape of the object, gives rise to a new color value.

To be more explicit—a red billiard ball is apparently a uniformly red ob-

* United States Conditioning & Testing Co.

ject. If we attempt to paint a picture of one on canvas we find that many mixtures of color are necessary, and that the true color of the ball appears at only a few spots. We have unconsciously become accustomed to color changes along the lines of light and shade and use them constantly in judging size and shape. The color of all objects changes also many times between dawn and twilight, but always along certain lines; a general character is never lost, but there is a variable that is often changing.

Physicists tell us that light, which consists of a great number of different vibrations or waves, each representing a pure bright color ranging from the last visible violet to the last visible red, gives to our eyes, and to the photographic plate, the sensation of white. When white light falls on any object several things happen at once—some of the white light is scattered without change, some is absorbed or changed to heat and lost, some rays are absorbed and others are reflected from the object as color. These various effects take place in a definite percentage ratio for each colored object so that a less amount of light at any point, or at any time, will decrease the amount of colored and total rays reflected, giving the effect of mixing black with the color.

Scientifically speaking, black is non-existent but is simply the sensation produced by the absence of white, just as cold is the absence of heat, and silence the absence of sound. However, it is on account of this unwillingness to recognize the existence of black and white as colors in good standing that scientists have failed to adapt their work to the needs of the practical colorist and to evolve a system for their use.

WHAT COLOR CONSISTS OF

We may consider any color as a combination of these factors; viz., the colored rays which determine the hue, next the light reflected without change, and last the light absorbed and lost. The hue may be due to the result of many colored rays from different parts of the spectrum and need not be the mono-

chromatic light with which the scientist mainly deals. Although composed of many rays of different lengths, it will have a hue corresponding to some single ray, and for all practical purposes we will consider it as that color without attempting even to analyze it. The second factor, or reflected light, we will call by its proper name, white, and the lost light we will call black. We then can imagine all visible colors as being made from pure color, white and black.

We must content ourselves with imagining, for there are no means in existence of depicting or illustrating these colors. None of our dyes, paints, or stains, or even brilliant flowers, approach near enough to a pure color untinted by white or unshaded by black.

Even a spectrum from a prism, or a diffraction grating undergoes a certain amount of absorption or loss of color. In the same way it is impossible to obtain a perfect white or black without their being contaminated with each other or the other colors. These conditions make impossible the construction of a chart in color that will classify all possible colors. It is not difficult, however, to form a serviceable mental picture of the entire system, which will be of great help in solving color problems, irrespective of the materials involved.

The basis of all color system is the solar spectrum, as far as it goes, but there are a number of colors whose hue is not represented by a monochromatic ray, but by a mixture from both ends. The bluish reds and reddish violets fill this gap and must be considered in our classification.

SYSTEM OF CLASSIFICATION

Let us take the spectrum and imagine it bent into a circle, with the gap between the two ends filled in with the pure bluish reds and reddish violets and the regular colors compacted or drawn out as required so that by starting at 0 degree we have a pure crimson red and exactly opposite it, at 180 degrees, the green, which is its exact complementary. An orange will be at 60 degrees, and opposite it at 240 degrees will be its complementary blue. Yellow at 120 degrees will be opposite its complementary violet at 300 degrees.

Every color around this circle is of equal importance and represents a hue. The difference between each member is the least difference that can be detected by a trained eye, yet there is a gradual blending of each hue into the next all around the circle. As the musical scale has been made by select-

ing certain numbers of vibrations per second and making them the notes of the scales, so we can arbitrarily select from these many hues several definite points and use them as points of reference.

The six equidistant points noted above give us our red, orange, yellow, green, blue and violet. Many of us have been taught that red, yellow and blue were primary colors, and that orange, violet and green were secondary colors, and a number of dark shades were tertiary colors. Then came the advocates of red, bluish violet and green as primaries, and to-day there is much confusion on this point. At least fifteen years ago the writer, in an obscure dye trade journal, suggested that all the pure hues, untinted by white and unshaded by black, were primaries of equal value, yet any one could be matched by a combination of equal quantities of colors from both sides of it, providing they were arranged as cited above.

The next step in the classification is to place white at the center of the circle. This white must be of the highest possible purity and contain qualities that will almost be a strain on the imagination. Now, from the circumference of the circle carry each color toward the center, diluting it with white in proportion to the distance so that from the pure white center there will be an evenly graded increase until the pure undiluted hue is reached at the circumference. We may now consider the colors consisting of only white and hue our secondary colors. Both our primary and secondary colors are destined to exist only in the imagination and cannot be represented by any artificial means. All the colors of art and nature are our tertiary colors, as they contain the third element or black in a greater or less degree.

If we now take the circle and diminish its size by one-thousandth, and imagine one-thousandth part of black to shade the whole uniformly, and place this circle on the first one, then continue to form a pile of circles with each differing from the one beneath it by

one-thousandth less diameter and one-thousandth more of black over the original colors, when we reach the thousandth circle we will have only a pure black point. From the black point to the white center of the first circle we will have a line devoid of any hue whatever, consisting of neutral greys without tint. The whole will form a cone having a height equal to half its diameter and will contain all possible colors arranged in their true relation to each other. It must be thoroughly understood that such an arrangement is purely arbitrary and really a conventionalization of the spectrum.

The relation of the hues in the spectrum to each other is somewhat distorted, more so in a prism spectrum than in one made by a diffraction grating. This is best seen by plotting a curve of the wave lengths against the positions of the lines in the visible spectrum. The curve of the prism spectrum is noticeably distorted, the grating spectrum is more regular, but in this imaginary system we make it a straight line and supply the missing hues.

Everyone has also noted that the hues act on photographic plates in a manner that does not correspond to their visual appearance. Dark violets produce white on the print and bright reds become dark. The effect on the eye is also of a peculiar nature, as some colors of the spectrum seem brighter or more luminous than others. We readily admit that yellow is more luminous than violet, but this is entirely due to a peculiar sensitivity of the eye which compares with the peculiar action on the photographic plate, and there are other

substances which are still differently affected by the rays. We then must be prepared to separate from the true colors or hues all ideas concerning special effects they produce and be ready to consider all the pure hues, which we have designated as primaries, as of equal value when used as factors in producing combinations.

INTERESTING RELATIONS

If we now take this conventional color cone and study its properties we will see some very interesting relations between various colors and many of the so-called color paradoxes will find an explanation. All possible combinations of any two colors lie on a line connecting those colors, and a resultant of a mixture lies nearer one or the other according to the percentage in the mixture. A mixture of three colors limits the results to the area of the enclosed triangle. While we cannot calculate the percentage of colors entering into a combination, we can mentally figure the results using the scheme as a map to guide our efforts in matching shades.

Perhaps a brief summary would be a help at this time. All practical colors are neutral grays of lighter or darker shade dominated with more or less of a single hue. A well-known illustration of this fact is seen when we color a black and white photograph with brilliant aniline stains, without any attempt at shading, and obtain very life-like color effects.

COLOR MIXING

Color mixing needs some explanation before we proceed. Let us take three

colored glasses or color filters—red, yellow and blue, so chosen that each passes a portion of the spectrum and excludes the rest. Place the three together and no light whatever will pass through, for each has stopped some of the rays. Now if they are separated and a strong white light passed through each and the three-colored beams allowed to fall on the same spot on a screen the result will not be black as before, but white. Each has passed some of the rays and together they have made up the full spectrum.

Another illustration of the same phenomenon is seen if we dye a white silk fabric with a combination of three dyes—a red, a yellow and a blue, so we obtain a deep neutral tone or even a black. Then the same amount of each dye that was used in the mixture is dyed separately on three other pieces of silk and the samples pasted on a top or used as portions of a circle. On revolving the top or circle the colors mix and the result is very near a white. That it is not a pure white is due to the fact that all dyes contain a trifle of the black element which interferes with all pure color effects.

There is then quite a material difference whether in a mixture of colors the conditions are such that each new material used subtracts from the total rays or whether it adds rays to the total. Colored materials are transparent, opaque or translucent, sometimes the light passes through entirely, sometimes it is reflected entirely, and in other cases is a combination of both conditions. Textile materials are of the latter class, silk and mohair being more

transparent than cotton and linen. All have noticed the deeper color of wet kalsomine or wet cotton or silk as compared with the same when dry. The wetness has increased the transparency and also diminished the points of diffraction, and this allows a reflection of the color from below the surface without having it obscured by light reflected from the many fine points that exist on the dry material.

A very much broken surface like ground glass, the foam of ink, tussah silk and split silk fibers diffracts so much white light that the color is lost. On the other hand, the pile of velvet and other cut fabrics shows more color than the yarn of which it is composed. Oils and finishes are used to brighten the colors of textiles by destroying the diffraction points and increasing transparency. When the oil is washed out or becomes saturated with dust, the color seems to have faded. Silk is the most desirable textile fiber for decorative purposes on account of its transparency, luster and ability to show to the best advantage the colors applied to it.

There are other factors accompanying color which are, however, distinct phenomena. The first is metallic luster, a property of matter due to an arrangement of the reflecting surfaces and not confined solely to metals, but often present on fish scales, insects, feathers and aniline dyes. Closely allied to it is pearly luster and iridescence, followed by dichroism and fluorescence. Pearly luster and iridescence are merely different effects which, instead of reflecting white like the irregular surface of ground glass, are more parallel in the division of the surface and form innumerable tiny spectra in which we often see but a few rays at a time, causing one color or another to be most conspicuous.

Dichroism and fluorescence are very closely related. Dichroism is a property noticed in minerals and dye solutions causing them to appear different colors in different directions. Fluorescence requires a colloidal solution and is a combination of dichroism and iridescence.

Now, all these accompaniments of color are side issues and should not be allowed to confuse us any more than the simpler conditions of dull and glossy, transparent and opaque, yarn, cloth or velvet. We must be able to think of the color in question as being only a product of three factors—white, black and dominant hue or primary. The other effects have to do entirely with the materials and are generally constants.

RULES OF HARMONY

The subject of color harmony is seldom figured out by rule, but as it is not altogether a matter of sentiment there are a few rules that have no regard for individual preference of one color to another. The first rule of harmony is that for two colors to be in greatest harmony they should contain the same amount of white and black and be dominated by complementary hues, *i. e.*, they should be on the same plane, equidistant from the center and opposite each other. Three or more colors will harmonize if they are symmetrically placed about the center on the same plane.

In general, colors whose positions in the color come from simple symmetrical geometric figures will make a harmonious combination. Colors on different planes will be in harmony if a line connecting them passes through the central line or axis of the cone. In a design or composition with a number of varied colors the general effect will be most pleasing if the total of the colors mixed together would produce gray. When one hue predominates it will only be effective when the deficiency is supplied by surrounding objects.

The reason for this is a physiological one. The retina of the eye soon tires of a single hue, but the effect of a neutral tone is restful. As we are not per-

fectly still at any time, the different nerve endings in the retina get an assortment of rays that does not tire them and we consider the effect pleasing. Our physical body has always a great influence on the mental processes and when we speak of harmony of any kind we may be sure it means that which is easily assimilated without any irritation or strain on our sensory nerves.

STANDARDIZATION NEEDED

There is to-day a great need for a standardization of color. The colors of art and industry are not the colors of pure science, for those we use in the day's work are variable according to the light they receive as well as to other conditions. We know that if a color varies in its dominant hue it cannot be considered as the same color, but how much variation is allowable in its black and white content before it loses its identity? A brown in the bright sun may be of exactly the same color as a reddish orange in a darkened room because they have the same dominant

hue and differ only in black and white content. While the conditions in this example are extreme, the same thing in a lesser degree would occur with each separate observer of a color, and it is not hard to predict that many difficulties will be encountered in measuring and numbering the ordinary colors.

Research is being carried out along the line of measuring colors of dye solutions and pigments both at the Bureau of Standards and the Nela Research Laboratories, as well as the independent work of F. E. Ives, so there is hope that the near future will give us an instrument that will be capable of measuring what here has been called the white, black and hue of both solutions and solid objects. There are several instruments in existence, each covering some part of the needs, and it will be a great advantage to colorists in every field when the existing data are collected and a colorimeter constructed which is adapted to the needs of the industrial world.

Textile World Journal

CONCERNING AUTO TOPS

AMERICAN DYESTUFF REPORTER,
New York City, N. Y.

Gentlemen:—We are having considerable trouble in obtaining required results in the manufacture of Lining Dyes, suitable for staining linings on auto tops.

We are using, at this time, liquid oil black, soluble in naphtha, and we note where the fabric is of good quality the

results obtained are satisfactory, but on a surface made out of cotton it is very hard to stain the surface.

Would appreciate your comments, and if there is any advice you can give us to work out this difficulty, we will highly appreciate it.

Awaiting your advices, we are

Yours very truly,

— — — Co.,

St. Louis, Mo.

Answer:

The difficulty of staining cotton fibres black in the presence of wool, silk and leather by the use of oil soluble dyes has been one of the limiting features of these products. Two methods have been developed to overcome the difficulty. The first, used principally in connection with the re-dyeing of kid gloves is to dissolve the oil black in half the usual quantity of Solvent Naphtha. (This naphtha is from coal tar and is not deodorized gasoline.) Then there is prepared another solution of the same weight of soap as the dyestuff used, and the same amount of denatured alcohol as you have of naphtha. These two solutions are mixed together just before using and give results superior to the simple oil black solution.

Another method is to use a basic black mixture dissolved in alcohol with a small quantity of Shellac, not enough to give a glossy or hard material, but just enough to prevent the dye from bronzing. Those may be used alone or mixed with an oil black solution.

Still another method which requires more work would consist in going over the material first with a solution composed of Direct Cotton Black, soap and water. This would color the cotton, and, after drying, the regular oil black could be used.

Number 2 of "The M. O. H. Bulletin," issued monthly by the Marden, Orth & Hastings Corporation, has reached this office. Among other items of interest are included articles on "Trade Conditions on the Coast," "Our Louisville Oil Refineries" and "New Uses for Our Treated Fish Oils."

AMERICAN DYESTUFF REPORTER

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New York, July 29, 1918

No. 5



AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, July 29, 1918

No. 5

Encourage the "Pan-German" Idea

But Let Us Do the "Panning" Ourselves
What To Do If You Meet a German Spy

THANKS to the efforts of the Committee on Public Information and to the practically continuous fusilade of verbal warnings, graphic delineations and spirited denunciations, the consuming public is at last beginning to understand the real meaning of German propaganda. Perhaps the first-mentioned agency should have the lion's share of the credit, for through this, more than any other, has come the literature which has indicated clearly just what this oft-mentioned ogre is, and of what avail is it to denounce a thing to someone who wouldn't recognize that thing if they met it?

We must not forget, either, the splendid work done by numerous individuals who, before the establishment of the Committee, by their vigorous public utterances, which were subsequently quoted in the newspapers and the trade press, did so much to awaken in the powers that be the need for just such an organization. Often they were ridiculed, and sometimes, even, their very motives were questioned, but they fearlessly held to their self-appointed task and, by attracting the attention of others who assisted in spreading the gospel, became the center of a species

of propaganda of their own making which did much to overturn the variety made in Germany.

The fact was that the public heard so much about "German propaganda" for a time that the word has actually almost lost its meaning for some who thought they knew what it was, and was ignored by those who never professed to know. They got it in the morning at the breakfast table, on the train, at the office and in the movies. They heard that it was "insidious," that it "spread all over the country like a huge, slimy octopus," whose tentacles reached gracefully into the innermost recesses of a man's mind and turned off the little dingus which controls normal thought. They gravely told each other that it must be counteracted, suppressed, crushed; that it must be ruthlessly stamped upon whenever and wherever it dared to show its ugly head. They heard it worked three shifts a day and never rested. The comic weeklies made them familiar with the picture of a German wearing an eighteen collar and a number six hat, the face adorned with horn-rimmed spectacles and a blond mustache of the walrus type, the hand holding a diminutive American flag, and a bomb protruding from the

hip pocket. But, of course, nobody ever actually *saw* such a thing, and nobody ever *heard* any German propaganda themselves, and hence, German propaganda eventually became something merely to warn others against. To them, the propagandist was someone who lurked around corners and sneaked up alleys in the dead of night, bent upon his nefarious and unspeakable missions, whatever they were. And, ye gods, how they hated him!

Those who have read Edward Everett Hale's story "My Double, and How He Undid Me," will recall how the hero, surfeited with public adulation and a plethora of speechmaking, hired another man who closely resembled him to dress in his clothes and deliver, in his head, an address which the hero was scheduled to make at a banquet. But as the double was an uneducated man and unable to deliver any sort of an address, he was simply charged to say, "Gentlemen: So much has already been said, and so well said, on this subject, that I fear I can add nothing to it," and sit down. The fiasco which ensued when the double chanced to be the first man called upon can well be imagined!

We also feel that so much has already been said concerning the subject of German propaganda as applied to the dye industry, that it almost borders on temerity to approach it again, and yet we believe that if only one more person can be made to understand how the most loyal and patriotic of men can themselves unwittingly become purveyors of the most successful sort of German propaganda, the space devoted to this homily will not have been wasted.

To begin with, we should like to get into the game and take our turn at attempting to define it. As we see it,

German propaganda is *not* at all what Germans or German sympathizers say or do, but instead, what patriotic Americans often say or do in unguarded moments. Two examples will serve to illustrate what we mean by this.

Readers of the AMERICAN DYESTUFF REPORTER were recently told what the German color combine had to say about their confidence in their ability to regain their lost foreign trade. The very latest word regarding this comes from the pen of a German writer, Prof. Kurt Wiedenfelt, who claims to have made a special study of the subject. In an article in the *Finanstidende* (Copenhagen) received by the Bureau of Foreign and Domestic Commerce, Washington, he dwells at some length upon the certainty of renewed German domination of world trade, and "finds that Germans generally believe in the value of . . . their production of dyes and are placing much reliance in trade in these articles after the war." We know already that this is so, and one more repetition of the fact does not constitute so-called German propaganda. It is propaganda, right enough, but by itself would do no harm, and it is not what is meant by the term as it is now used. More than one loyal American has called attention to the seriousness of the outlook for the American dyestuff industry, once the German combine has a fair chance at it, without being accused of being the mouthpiece of Berlin. This sort of thing, on the contrary, is beneficial.

But it is the loyal American who reads these statements, begins to doubt the abilities of his country's manufacturers, begins to fear for the future, and eventually shakes his head sorrowfully and says mebbe they're right and you've gotta look out for yourself in this world and he's going to be on the safe side of the fence, who, especially if he is influential and has a wide circle of friends, does the real harm and becomes a starting point for rumors which, losing nothing by repetition, come at last to make for discouragement and a weakened morale. Remember, the newspapers always exaggerate things, and John Jones ought to know

what he's talking about, for hasn't he got a brother in the business!

Now for something more concrete. It was just about one year ago, after this country was successfully launched upon its war against barbarism, when a young man, speaking of trade publications in general and the probable effect upon their pocketbooks which their attitude towards the German color combine might produce after the war, said to the writer: "Watch your step. There are plenty of German dye firms in this country who will be ready to jump in the minute peace is declared. They aren't going to forget the magazines which 'panned' them when they make up their advertising appropriations, and they're going to spend millions. Take it from me, the less you say about crushing the German serpent, the better off you'll be in the long run."

The young man who said this is this minute in the trenches. He is personally known to the writer and is thoroughly patriotic. Yet here is the genuine article—German propaganda in its most characteristic form, and only that he was so very young he might have influenced many, for he had himself been strongly influenced by those older and wiser than he, and he followed almost blindly even while he gave utterance in the same breath to sentiments of a most patriotic nature.

He was ready to sacrifice his life, if necessary, to maintain his country's rights, but meanwhile, you just simply couldn't buck impossibilities, and that was all there was to it.

Nothing more need be said. Anyone can understand now what is meant by German propaganda, and the remedy is easy. One must give as much as he gets; the doctrine of pan-Germanism must henceforth be most heartily encouraged, and we must do the "panning" ourselves. We know that the dye industry of this country has got to survive, and after this is thoroughly understood everything becomes simplicity itself. Therefore, remember that optimism and ridicule are the two most effective weapons yet devised against the German idea, and the universal practice of these can do more to change

our hopes into realities than whole pages beginning, "We view with alarm." Become a propagandist yourself, and force the German variety off the market. We have been burdened with it quite long enough.

BERLIN ANILINE DYE CO. REPRESENTATIVE INTERNED

Oswald Kunhardt, local representative of the Berlin Aniline Dye Works, with office at 124 Pearl Street, Boston, was yesterday, after leaving a train at Manchester, Mass., arrested under the alien enemy act. He was interned at the East Cambridge jail.

Owing to the lack of water in the rivers of North Carolina, 125 cotton mills in that state, supplied by hydro-electric power, were obliged to shut down for twenty-four hours last week. Over 3,000,000 spindles were rendered idle for the time being.

NATURAL DYES FROM THE PHILIPPINES

In a recent report the Philippine Bureau of Science states that probably more than a hundred species of plants containing valuable color principles are found in the islands, and many more could be readily cultivated. In most cases the colors produced are inferior in quality, being either fugitive or lacking in brilliancy. As the plants that yield dyeing materials grow wild and often are widely scattered, the supply is unreliable and insufficient. Little has been done towards developing the manufacture of local coloring materials, and until there is an intensive cultivation of the necessary plants, and the capital necessary for the enterprise can be secured, there is little prospect of commercial success.

Only two Philippine dye plants are commercially important. These are indigo and sappan or sibucao. Others are used locally, but scarcely enter into domestic commerce, much less into the external commerce of the Archipelago.

Sappan or sibucao is a shrub or small tree, widely distributed in the settled areas of the Philippines at low and medium altitudes. It is not systematically cultivated, but in a few districts, such as Guimaras Islands and parts of Panay, it is found in great abundance. In general, it appears only as a widely scattered tree. The wood is annually exported in considerable quantities to China.

Exports of sappan wood from the Philippines to China and Hongkong in 1914 amounted to 2,137,000 pounds, valued at \$9,400.

The wood yields, an extraction with water, about 2 per cent of coloring matter, essentially the same as that obtained from the Brazil wood, Pernambuco wood, Lima wood and peach wood

of South and Central America. All contain brazilin, $C_{16}H_{14}O_5$, closely related by constitution to haematoxylin. Brazilin is destitute of color but dissolves easily in alkalis, yielding a red solution. This, on exposure to the air, oxidizes to brazilin, $C_{16}H_{12}O_5$, which possesses vivid tinctorial properties. It is used to some extent in cotton dyeing and calico printing and occasionally on wool, chiefly in connection with other dyes. The brighter lakes with aluminum mordants find a limited use. The dye is quickly affected by light and washing. The extraction is not carried on in the Philippines, but in the countries importing the wood.

Indigo, locally known as tayum, tayom, tagum, pouay, tayum-tayum, and tagung-tagung, has been in the past extensively cultivated in some parts of the Philippines, and the prepared product entered extensively into the export trade. With the development of the coal-tar dye industry and the manufacture of artificial indigo, however, the production of indigo as a commercial crop in the islands practically ceased. It is still cultivated on a small scale in some parts of northern Luzon, but only to supply a limited local demand. It is highly probable that the extraction of natural indigo might be profitable at present, but the rehabilitation of the industry would take time and a considerable investment of capital in extraction vats. With the practical certainty that at the close of the war the industry would suffer from the competition of synthetic indigo, these seems to be no inclination to take risks.

Brown dyes are obtained from numerous plants, chiefly from the shrub or small tree known as bancudo or nino (*Morinda indica*, Linn.) certain of the mangrove trees, such as ceriops and bruguiera, the bark of xylocarpus (*tabigue* or *nigui*), and from numerous other less important sources. Bancudo is a well-known al dye of India. Cotton mordanted with tannin is colored dark red with this material.

Black dyes are secured from *Herri-tiera litoralis*, a common coastal tree, and from some species of *Hibiscus*, *Semecarpus*, *Terminalia*, and *Diospyros*.

The determining factor in most cases is the presence of tannin in large quantities.

Yellow dyes of minor importance are secured from the seeds of *Bixa orellana* (annatto); from the wood of *nauclea* (baucal); from *Carthamus tinctorius* (safflower) which is occasionally cultivated as a dye plant; from the bark of the common mango; from some species of *Vitex* (molave); and from *ligtang*, a woody vine having yellow wood rich in berberine.

NEW PUBLICATIONS

THE DYEING OF COTTON FABRICS

"The Dyeing of Cotton Fabrics," by Franklin Beech, second revised edition, \$4.00, published by Scott, Greenwood & Son, London, whose American agent is the D. Van Nostrand Co., New York, has just been published. The author is well-known and his books have had a wide and extensive sale among owners and managers as well as among dyers and finishers of textile mills. This edition is illustrated with forty-four engravings, contains about 300 pages with nothing eliminated from the first edition. The instructions for the use of each dye have been numbered and other improvements have been made to facilitate reference. It was the author's aim not to produce an elaborate treatise, but rather a book of convenient size in which the most modern processes have been described in detail, care having been taken to select those which experience shows to be thoroughly reliable and to give good results. This revised book is an important contribution to the dyeing literature of the textile industry.

THE COTTON MILL YEAR BOOK

Something which should be in the possession of every mill man is the first number of the "Cotton Mill Year Book," which has just come to hand. This useful and convenient little volume contains in handy form much data of interest and should prove very serviceable to those connected with the industry. It was recently issued by the

National Association of Cotton Manufacturers, who are planning to make its publication an annual event hereafter.

The Cotton Mill Year Book contains a section dealing with "The Development of the Cotton Trade in 1917," from the pen of Arthur Richmond Marsh, editor of the *Economic World*, that is a perfect mine of useful information, handily tabulated. There are also a number of statistical tables relating to raw cotton, a section devoted to technical tables used in the manufacture of cotton, and a large amount of engineering data. To all this is added a very complete "Buyer's Index," including all of the best known manufacturers of supplies used in textile mills. The price of the book to the public is placed at \$1.50.

So far as we know, this is the first employers' association to publish a work of this kind, and judging from the work at hand the National Association of Cotton Manufacturers is doing the industry and the public a genuine service.

AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated.

A. P. HOWES, Editor and Publisher

THE RIGHT KIND OF ADVERTISING

British Dyes Limited is running in the British trade press a series of educational advertisements designed to impress upon the consuming public the essential necessity of developing and maintaining a domestic dyestuff industry completely self-contained from the production of crudes to the manufacture of finished products.

Their current advertisement, for example, reads as follows:

"In this, the sixth article of the series, the dominant principle controlling the policy of the company may once more be stated and emphasized, namely, that only by unlimited and cheap supplies of the materials from which the Fundamental Intermediate Products are manufactured, will it be possible to recapture for this country the Aniline Dye industry. It must also be clearly impressed on the public mind that this can only be accomplished by the establishment of large and complicated plants, not only for manufacturing the Fundamental Intermediate Products and the finished colors, but for the proper utilization of the by-products developed in the course of their manufacture.

"In the first four articles of this series we described certain Fundamental Intermediate Products, viz.: PARANITRANILINE BETA NAPHTHOL, BENZIDINE, H. ACID, and at this point it may be of interest to indicate by illustration how essential they are to color manufacture, and how varied and important are the colors controlled by them.

"Paranitraniline, which was described in the first article of the series, enters into the manufacture of a vast number of dyestuffs. When used for the production of Para Red it has enormous value for the dyeing of imitation Turkey Red on cotton by coupling it with Beta Naphthol, whilst when coupled with H. Acid and Aniline it produces the Acid Wool Blacks known as Naphthalene and Naphthol Blacks, colors which are used in enormous quantities in the dyeing of all classes of wool textiles. So adequate is our production of these Fundamental Intermediate Products that we are in a position to offer a full range of these Acid Blacks in unlimited quantities, a matter of real national importance in the prevailing conditions.

"H. Acid, described in our fourth article, enters even more extensively into the production of colors. For example, when coupled in the usual way with Paranitraniline, and then recoupled with Benzidine and the Sulphonic Acids of Naphthol, etc., it produces a great variety of Blue and Blue Black Direct Cotton Colors, some brands of which we are in a position to supply in any required quantity.

"These examples will give some idea of the importance of the four Fundamental Intermediate Products under review, and if there be used with them in addition—Aniline, Phenols, and Salicylic Acid, products which we shall have under review in the near future, we have a group of Fundamental Intermediate Products from which can be produced a great range of colors for the dyeing of wool, silk, cotton, linen, jute, etc.

"This indication of the importance of the Fundamental Intermediate Products will explain in some degree the policy of the company to ensure the production in quantities to meet all possible requirements, and the following incident in commercial history will serve to show that every effort must be made to secure the supply in the future. In order to establish a national industry, France in pre-war days imposed a tariff on imported dyestuffs, but practically no protection was given to

Fundamental Intermediate Products. As a result, Germany stopped exporting dyestuffs to France, but exported large quantities of the Fundamental Intermediate Products in such a state of completion as to enable them to be converted easily and cheaply into colors. By this policy they defeated the object aimed at by the tariff and prevented the dyestuff industry being established in France on anything approaching a national scale."

It seems to the REPORTER that advertising of this sort might properly be undertaken by some of the leading American manufacturers. It has all the distinctly commercial advantages to the firm sponsoring it which any form of advertising can have—it impresses the reader with the magnitude and scope of the manufacturer's operations and, because of its evident public-spiritedness, enlists his sense of patriotic loyalty, and, incidentally, offers the best sort of sales talk for his individual products.

But, in addition to the business-producing effect of such an advertisement for the individual firm which prints it, this class of advertising serves to acquaint the consuming public with the nature of the efforts which are being made by all manufacturers in common to meet the requirements of the national industry, and in this way encourages the cooperation of the consumer and serves as the best sort of counter-effective against all sorts of insidious German propaganda.

CHEMISTS TO DISCUSS WAR NECESSITIES AT CONVEN- TION

Thousands of chemists from all parts of the country are planning to come to New York City to attend the various conventions to be held by chemical and technical organizations in Grand Central Palace during the week of September 23. Coincident with these meetings will be held the fourth national exposition of chemical industries which promises to be the largest and most complete exposition of these industries ever held. In order to show the strides made by

the chemists of America it will be necessary to use three floors of the Palace.

While the exposition will bring manufacturers of machinery, equipment, products and supplies together with men who are using them, its chief effect will be to show the people of the country that the chemists of America have made rapid advances the past year, greater than ever before in this country's history. Much of the success of winning the present war depends upon chemicals and the chemical engineer. The convention will bring to light some of the marvelous results of recent research, and many engineers and experts who hold important positions in the advance of the chemical industry will be speakers at the various industrial conferences. The proceedings will develop matters of timely interest to the public as well as to the assembled delegates.

The advisory committee of the exposition is composed of Charles H. Herty, chairman; Raymond F. Bacon, L. H. Baekeland, Ellwood Hendrick, Henry B. Faber, Bernard C. Heese, A. D. Little, W. H. Nichols, R. P. Perry, H. C. Parmelee, G. W. Thompson, F. J. Tone, T. B. Wagner and M. C. Whitaker. Charles F. Roth and F. W. Payne are the managers. Dr. Bacon of this committee is now head of the Chemical Warfare Section of the National Army and a member of General Pershing's staff.

The exposition is a war-time necessity and regarding it as such each exhibitor is planning his exhibit so that it will be of the greatest benefit to the country through the men who visit it, all of whom are bent upon a serious purpose—that of producing war materials in large quantities, and constantly increasing this production till the war has been won by the United States and its allies.

Papers covering practically every phase of chemistry and a discussion of steps that will need to be taken after the war, will be presented by leading experts in each branch. Pressing chemical problems concerning many of the chief articles of the domestic and foreign commerce will be taken up during the convention, and it is expected these

discussions will have an important bearing on the future manufacture of materials that have been scarce and high-priced ever since the curtailment of American commerce with Germany and other European countries. In order to fill the demands for chemicals hundreds of factories have sprung up in various parts of the country, and while doing a large business, it is pointed out by experts that there is a lack of preparation to meet new conditions which are bound to follow at the close of the war.

Exhibit of Dyestuffs in Worcester

The Dyestuffs exhibit of the National Aniline & Chemical Company, Inc., is now being shown at the C. T. Sherer department store in Worcester, Mass. The Sherer store makes the fourth stop for the exhibit, which was first shown at the Sixth National Textile Exhibition, Grand Central Palace, New York, and subsequently at the Jordan Marsh store in Boston, and the Arthur B. Little, Inc., laboratories in Cambridge. It will be displayed next at the store of B. Altman & Company, Fifth Avenue, New York, beginning August fifth, after which it will probably go further afield. Dr. Louis J. Matos, of the National Aniline & Chemical Company, has accompanied the exhibit on its wanderings, and has been ready at all times to explain any problems that arise in the minds of the visitors, or to give simple and comprehensive summaries of the dye situation to representatives of the public press. This policy it is the intention of the National Company to follow during the progress of the exhibit from place to place, which will continue as long as interest is shown on the part of the public in learning the story of American dyes.

who is at the present time making this product. If any of our readers can give us information in this connection the courtesy will be appreciated.

After being in the hands of receivers for three-quarters of a year, the Federal Dyestuff & Chemical Co. has at last been completely reorganized as the Union Dye & Chemical Co., with Everly M. Davis as its president. The properties of the defunct concern were acquired for \$1,000,000. The new company will spend \$600,000 in plant expansion. The firm has government contracts to supply sulphur blues and khaki dyes.

Wanted—Diethyl Metaamidophenol

The REPORTER is in receipt of a request for information as to the availability in this country of Diethyl Metaamidophenol. Our inquiries so far have failed to reveal any manufacturer

THEORIES OF DYEING DISCUSSED

At a recent meeting of the West Riding Section of the Society of Dyers and Colorists, England, a discussion on the theories of dyeing took place which should be of interest to our mill men. The discussion as printed in the *Journal of the Society*, follows:

Mr. W. Harrison, in opening the discussion, said that in the chemical theory of dyeing it is assumed that the wool or silk forms a chemical compound with the dyestuff. In the case of a basic dyestuff the basic portion enters directly into combination with the fibre, the acid originally in combination with the dye being left quantitatively in the bath (Knecht, *Journal of the Society*, 1888, p. 72).

By extracting wool dyed with basic color with alcohol Knecht (*Journal of the Society*, 1902, p. 103) obtained a product containing constituents of animal nature. He also found that the compound termed languginic acid, discovered by Champion, had the property of precipitating basic colors from solution.

In the case of acid colors Knecht found that dyestuffs of the same homologous series were absorbed by wool in proportion to their molecular weights. This relationship did not hold with dyestuffs from different series.

More recently Fort and others (*Journal of the Society*, 1915, p. 96) showed that under certain definite conditions the amount of sulphuric acid left free in the bath during the dyeing of an acid color, over and above that left when no dye was used, corresponded in molecular weight to the amount of dye absorbed. He also found that this relationship did not hold under other conditions of concentration (compare this *Journal*, 1915, p. 80).

The author has recently pointed out (*Journal of the Society*, 1918, p. 57) that these variations are met with in several cases of absorption (compare also Walker and Appleyard, *J. Chem. Soc.*, 1896, p. 1334).

The mechanical theory was based on the fact that substances of an indifferent nature, such as glass beads, kaolin, porcelain, and quartz could be dyed in a similar manner to fibres, only to a less extent. For example, glass beads were found to liberate free acid from basic colors.

Georgievics held that during dyeing the particles of dye become fixed on or in the fibres by adhesion, the latter being similar to capillary attraction. He stated that most cases of dyeing are in agreement with Henry's law, which states that the distribution of a substance between two solvents depends on the molecular weight of the compound in those solvents.

The surface tension or adsorption theory is a modification of the mechanical theory, and is based on the mathematical calculations of Willard Gibbs, who showed that substances which diminish the surface tension of water at the surface of contact with air or with another liquid become concentrated at that surface. He also calculated that this effect should diminish with rise in temperature, which is, of course, opposed to practical observation in the case of dyeing.

The formula usually applied to cases of adsorption is:—

$x/m = kc^n$ where x = quantity of substance absorbed by
 m grams of fibre,
 c the concentration of the solution at equilibrium.

k and n are constants.

This is an empirical law, and cannot be deduced from Willard Gibbs' calculations. It is very similar to the law applied to cases of solid solution.

In the electrical theory in its present state four factors are taken into account.

(1) The molecular movement of dyestuffs in solution, which gives rise to osmotic pressure phenomena—rise in

boiling point, lowering of freezing point, Brownian motion, etc.

(2) The electric charge on the dye and on the fibre.

(3) The surface of the fibre, including that within its pores.

(4) The size of the dye particles.

The molecular movement of the dye particles of ions enables them to get into contact with the fibre. This movement is accelerated or retarded according as the electric charges on dye and fibre are of opposite or of the same sign respectively. To obtain a resist the charges should be of the same sign and as large as possible, as instanced by the case of acetyl and nitrocellulose with direct colors.

The dye particles or ions when they arrive at the fibre may be held there by electrical attraction, as in cases where dye and fibre carry opposite charges, or by other means when the charges are of the same sign, as in the case of the dyeing of direct colors on cotton. In the last case the dye is coagulated on or in the fibre, because its electrical charge is neutralized by the oppositely-charged ions or water molecules immediately in contact with the fibre.

Mr. J. C. Oxley considered that the chemical theory explained the greatest number of dyeing phenomena.

Mr. G. G. Hopkinson said that Mr. Harrison appeared to consider that the "Electrical Theory" explained all dyeing phenomena, but whilst he felt that it was a very interesting contribution to the theories put forward for the elucidation of the problem, particularly in the dyeing of cotton, it did not ap-

pear to explain the whole phenomena. For example, it was generally accepted that hydrolytic dissociation sometimes took place. Would Mr. Harrison say that such dissociation could be explained by electrolytic action?

Further, the dyeing of wool with certain acid colors in a neutral, or even alkaline bath, apparently opposed Mr. Harrison's theory put forward to explain the dyeing of such colors on wool.

Mr. W. Harrison agreed with this, but pointed out that hydrolytic dissociation could be explained electrically as well as chemically.

Mr. F. Smith wished to know why certain dyes when applied to unions of wool and cotton produced a totally different color on each fibre, if a chemical action or the electrical theory was the cause? Again, which theory was accountable for wool dyed before long exposure being faster to milling than wool dyed after, when using certain acid milling colors, i. e., Patent Blue?

Mr. W. Harrison said that the cause of color was a different problem from dyeing, and one which might conveniently be discussed at another meeting of the Society. It was difficult to explain why exposed dyeings became faster to milling without further investigation.

Mr. G. Dougil suggested that as chemical reactions necessitated a change in energy, a means of determining the nature of dyeing was available.

Mr. W. Harrison said that electrical neutralization also produced a change in energy.

Dr. L. L. Lloyd asked how the dye-

ing of certain cotton dyestuffs could be explained that were applicable from either acid, neutral or alkaline baths, and also why other direct cotton dyestuffs were best applied to wool from an acid bath.

Mr. W. Harrison stated that acids diminished the negative charge on both dye and fibre, and the retardation of the molecular motion by these charges was thus reduced, the dyeing being thereby assisted.

Dr. L. L. Lloyd pointed out that Chrysophenine, etc., could be dyed on wool from a neutral or an acid bath, giving shades fast to milling, whereas it would not dye to any appreciable extent from an alkaline bath. He could not understand why the dye, after converting into the sodium salt by the action of the alkaline milling solution, should remain on the fibre when the same color could not be applied from an alkaline bath. He was unable to offer a chemical explanation for this.

Mr. W. Harrison suggested that the acid in the dyebath produced a swelling of the wool fibre which enabled the dye to enter into it. The salt formed when the dyed wool was placed in an alkaline bath caused the swollen wool too shrink, thereby preventing the dye from getting out. Such swelling by acids and shrinking by salts has been shown by H. R. Procter to take place with gelatine.

Dr. L. L. Lloyd said that wool acquired an increased affinity for acid colors when treated with alkalis as well as with acids, and also by action of salts. Both alkalis and acids caused swelling in wool and other animal fibres,

also many salts caused a breaking up of animal fibre substance, the dissolved bodies, when obtained by evaporation *in vacuo* or at low temperature, having all of the properties of gelatine. In the treatment of wool by acids or alkalis there is a marked development of the amido group in the wool (Fort and Lloyd, this *Journal*, March, 1914), this certainly affecting the dyeing of wool. Exposed wool has also the amido groups developed to a larger extent than unexposed wool, this most probably affecting the milling properties of many dyestuffs.

Mr. W. Harrison suggested that both the increased affinity for dyestuffs and the stronger test with reagents were due to increase in internal surface of the wool fibre. He pointed out that all the chemical reactions on which John Dalton based his theory were carried out in solution. With solid insoluble substances the surface exposed had to be taken into account in chemical reactions as well as in electrical interchange.

Mr. F. Smith wished to know why Indigo was faster to light when dyed on wool than it is when dyed on cotton. He thought that such a difference would not exist if chemical action did not play some part.

Mr. W. Harrison said that chemical reactions promoted by light would take place between compounds in contact in any way, whether chemically combined or not.

Mr. H. E. Wood argued that if the dye were fixed by electrical action it should be possible to strip it off by the same means.

Mr. W. Harrison said that this did not follow, because electricity supplied from an external source always went to the external surfaces of the charged object, and in case of a fibre in water the surface of the water and

the vessel containing it would receive the charge. The contact-electricity which caused dyeing was developed at the surface of contact between fibre and solution, the internal surfaces of the fibre acting in the same way as the external.

Mr. H. E. Wood also asked which theory chemical or electrical, would best explain the increased affinity for direct colors of cotton bleached in certain ways.

Mr. W. Harrison said that the chemical theorists had nearly all come to the conclusion that cotton dyeing was not a chemical phenomenon.

Mr. W. E. Tetley asked why ammonium sulphate could be used in place of sulphuric acid as an assistant to the dyeing of wool, and what electrical effect took place; he also asked why such a small amount was sufficient to cause complete exhaustion of the bath?

Dr. L. L. Lloyd argued that according to the electrical theory ammonium sulphate should act like sodium sulphate or potassium sulphate, because the positive ions carried the same charge. Potassium and sulphate, however, have very different action in the dye-bath. In his opinion it was yet too early to cling to one theory only to explain the dyeing phenomena. We know too little of the constitution of wool or other animal fibres, and until this is known it is unwise to overthrow any of the chemical theories. The example of the dyeing of quartz is not sufficiently comparative to use to explain a theory. In the dyeing of quartz it is necessary to force the dye liquor through the powdered quartz mass, but with animal, or even vegetable fibres, it is possible to prepare the fibre such that the dyeing will take place without any agitation.

Mr. W. Harrison thought that it was unlikely that ammonium sulphate would act like sodium sulphate, because the ammonium ion would undergo secondary ionisation, possibly giving a positively charged hydrogen ion. He imagined that ammonium sulphate would give wool a positive

charge, but could not express a decisive opinion without making the necessary experiments. The difference between the dyeing of quartz and of wool he considered to be one of degree and not of nature. The forcing of the liquor through the quartz was merely an assistant in so far as it removed the products of interchange from the sphere of action. The same process also assists the dyeing of wool with the same dyestuff.

Dr. L. L. Lloyd pointed out that when ammonium sulphate or ammonium sulphate or ammonium acetate were used as assistants, both the acid and basic radicals were absorbed by the wool, whether in presence or absence of dyestuff in the bath.

In conclusion, Mr. Harrison pointed out that the electrical theory was in no way opposed to the chemical theory, but it provided explanations where the latter failed. The liberation of free acid from a neutral salt by negatively charged substances might be explained chemically when those substances were of acidic char-

acter, as in the case of quartz and perhaps cellulose. In the case of colloidal metals, such as gold and platinum, any chemical explanation would necessitate making the assumption that any two metals could combine.

In the case of paraffin wax and anthracene, which also carried a negative charge, similar assumptions would have to be made. Mr. Harrison thought that very few orthodox chemists would agree to these assumptions, so that the electrical explanation must be considered as the only one acceptable at present.

NOTES OF THE TRADE

The presence of German dyestuffs aboard Dutch ships was sufficient to have a convoy to the East Indies stopped by Holland after Great Britain had raised objections, promising interference by warships. A Dutch White Book, just out, gives the facts.

William Ficker of New Orleans claims to have perfected a dye-making process using the common or garden variety of weeds. According to Ficker, the American Indian was accustomed to daub his features with dyes of similar vegetable ingredients. The secret of making dyes from vegetable matter has been known to certain German scientists for years, he says. A group of New Orleans men have become interested in this new process, and have formed the Southern Chemical and Dye

Company, with \$150,000 capital, to manufacture and market the dye in powder form.

From the Ordnance Division, War Department, Washington, D. C., the Butterworth-Judson Corporation, New York City, has received a contract to construct a \$7,000,000 picric acid plant at Brunswick, Ga.

At the instance of the Jones & Laughlin Steel Co., the H. Koppers Co., Pittsburgh, Pa., will undertake the construction of a battery of 300 by-product coke ovens, with an annual capacity of 2,000,000 tons. The new plant will supply ammonium sulphate and toluol to the Government for war purposes.

A blaze which resulted in a loss estimated at over \$20,000 visited the plant of the Westmoreland Chemical & Color Co., at Philadelphia, recently.

Announcement has been made through the New York office of the Lazard-Godchaux Co. of America, Inc., that the firm has opened a new office at 15 Rue Sully, Lyons, France. The office will be managed by Louis Destree, who will at the same time continue to direct the affairs of the firm's Paris office.

Standard Color Card Adopted

At an executive meeting of the Conference Council of Garment Wholesalers and Retailers, held July 10th, a resolution was passed which called for the adoption of the American Standard Color Card, issued by the Textile Color Card Association of the U. S., Inc.

The resolution also recommended to the participating associations that they in turn recommend the American Color Card to their members.

These Associations are: Cloak, Suit and Skirt Manufacturers' Protective Association; Dress and Waist Manufacturers' Association; Merchants' Ladies' Garment Association; National Retail Dry Goods Association; National Garment Retailers' Association; Retail Dry Goods Association of New York.

AMERICAN DYESTUFF REPORTER

Vol. III

New York, August 5, 1918

No. 6

KEEP THE GERMANS
AT HOME—
WHERE THEY BELONG.

IN THIS ISSUE



In assuming control of the

American Dyestuff Reporter

the publisher announces the following

EDITORIAL POLICIES

- To devote the Reporter wholeheartedly to the development of a permanent domestic dyestuff industry in America.
- To advocate everything which will expedite this development and oppose everything which will retard it.
- To eradicate the widely held conviction among consumers and the general public that American dyes are at best "makeshifts."
- To expose and condemn everything in this industry which smacks of German propaganda.
- To stimulate co-operation and mutual helpfulness between manufacturers and consumers.
- To foster a spirit of tolerance on the part of consumers with the efforts which manufacturers are making to supply their needs.
- To advocate such tariff or other legislation as may be essential to the welfare of the industry.
- To encourage constructive co-operation and discourage destructive competition between manufacturers—both large and small.
- To make our circulation cover every field which consumes dyestuffs and to supply these consumers promptly with authentic information regarding the development of American colors and the most approved methods of their use.

AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, August 5, 1918

No. 6

"HANS ACROSS THE SEA"

That is Where He is Now, and That is Where He Must
Be Kept—Our Time to Study the Best Means is Now

DOUBTLESS the reader will be able to remember with all too vivid distinctness—and perhaps with a touch of the old blackboard sickness also—how, when he was at school, he was invited to compute how much 'steen pecks of, let us say, potatoes, would cost him at so much per peck, and then to find out for how much per peck he would have to sell this quantity in order to make a profit of \$10.00 on the transaction.

Unlike the grocer, however, a mistake in figuring which placed the price too low would cost him nothing except a possible invitation to linger after the others had departed and delve deeper into the intricacies of mathematics. He was not required to stand the actual cash loss involved; he had, so to speak, nothing really vital at stake—although an afternoon spent over a desk is a pretty vital thing in the estimation of a small boy at that. But supposing the error had cost him his supper instead!

Later on he took life a bit more seriously when he went to high school. His mistakes cost him more in the way of personal effort to correct to the entire satisfaction of his teachers, but still things went on much as before; he knew where he could get three meals

a day and what slips he made in connection with the bookkeeping course he may have been taking caused no losses in the mythical firm for which he kept the accounts, nor to himself in the way of a curtailed salary. He couldn't be "docked" and he couldn't be "fired," and so he had not to suffer for neglect or carelessness. He was constantly protected from life while he was *learning* to live, and this was right and necessary and a great advantage to him in after life. But in those days his losses as well as his gains were largely theoretical.

Perchance he may have gone to a technical school, and eventually college. If so, the order of things still continued; his designs for bridges with an overestimated carrying capacity caused no loss of life or property, nor did his insufficiently graded railway curves, and, to hit a little nearer home, neither did his miscalculated bleaching or dyeing experiments result in the destruction of thousands of dollars worth of valuable textile materials.

But at last there came a time when he found himself up against the world itself, and then he discovered the fearful "kick" which often lies in the most trifling and petty mistakes—mistakes which would have lowered his marks

only a point or two in school; he learned that carelessness and neglect were paid for with the things necessary for his very existence, and that they had to be paid for until it hurt. He found his fellow beings short and sharp and uncompromising, exacting their pounds of flesh to the last particle and then reaching out to pick him entirely clean the minute he failed to watch them closely.

By this time the reader will probably be fairly bursting with the suppressed desire to shout: "Yes, yes, go on. Why don't you say it? The American dye manufacturers are the schoolboys and they'll never know what competition is until the war is over. Wonderful!"

Just so. The reader has hit the proverbial nail on its equally proverbial head. America has become a huge training camp in more ways than one, and from now until the war ends the air will continue to be filled with speculations as to what will happen when Hans the Salesman tries to again extend himself across the sea.

Following every great conflict, from the time when Caesar discovered that all Gaul was divided into three parts and then proceeded to ascertain how it would look in thirty-three, down to our own Civil War, there has always followed a so-called "Reconstruction Period." There has been a great rearranging and shifting; frequently a mad industrial panic has ensued, but always new price levels have been found and new bases of trade established.

There will most certainly be a reconstruction period after this war also. It is this period which is at present occupying the full attention of some of the most brilliant minds of the day. There have been some attempts to draw an analogy between the post-bellum days of the past and the approaching post-

bellum days of this generation, but with indifferent success. Prophets we have in abundance, and it occurred to the writer that some expressions of opinion based on this angle of the future might be of interest. But somehow, in every case the conversation immediately shifted to other and more immediate aspects of the situation. Perhaps the most illuminating contribution to the subject was furnished by a dye salesman who hails from the City of Brotherly Love—a true Philadelphic Oracle, if you please—who said: "You cannot attempt to use former reconstruction periods as a guide toward the correct method of procedure in the present case, for there is no similarity whatever. In fact, I doubt whether there is a man in the country who would even venture to express an opinion on the subject. Have a cigar!"

This was distinctly discouraging. However, we still believe that there is at least one useful lesson which may be drawn from a study of those stirring days. The organization known as the "Ku Klux Klan" was established in the South for good and sufficient reasons, as everybody knows full well. Its methods were, of course, lawless, and would never do in these days—nor should such a thing be thought of. But unquestionably it was exactly the proper thing to combat the conditions of its own time and it performed its work well. When it came to necessary propaganda it is doubtful if it has ever been equalled, and hence, if not the organization, at least the underlying idea may profitably be kept alive and practiced. In fact, something of the sort *must* be practiced; it will form one of the principal assets of the dye industry when the struggle comes.

Yes, this is the season for speculation and education. Just now, the American manufacturers of dyestuffs are free to plan their campaign, to discuss among themselves the probable turn of events and to provide against weaknesses which may show themselves upon examination. And while the war continues they will not be required to pay in anything more vital than extra work for the mistakes which they may

make. They are protected against feeling the full force of their own errors while they theorize to their hearts' content. And the more they study and theorize, the better fitted they will be to face the big battle for existence when it comes. Like the student, they must take advantage of the respite which is granted them to prepare. And apparently they know this and are straining every effort to fit themselves to face their antagonists.

Just how far the fairly generous protection for coal-tar products contained in the Congressional enactment of September, 1916, will suffice in many individual cases, cannot be accurately estimated until the American maker is brought actually face to face with foreign competition. The effectiveness of the provisions to prevent underselling and unfair competition will be known only after the machinery is in genuine operation.

It is felt that in most cases the American producers of coal-tar colors and other synthetic preparations can con-

fidently await the ordeal. The mechanism of manufacture will be practically standardized, and the all-important trade relations with the consuming public will have been established.

In some cases, however, the margin of safety will be rather limited. This is to be expected, more especially in the categories of colors in limited demand and of those, such as vat dyes, for instance, the manufacture of which may be introduced shortly before the return of normal conditions. Our chemists will tend to measure more and more carefully the probabilities of approaching peace as they undertake new problems and consider the factors of success.

The old expression "hands across the sea," signifying international amity, sounds so suspiciously like something else that it is hard to refrain from resorting to "the lowest form of wit" just long enough to lend local color, so to speak, to what we wish to say. "Hans" was once "across the sea"—in our midst. Now, owing to the war, he is

still across the sea—from us. Let's keep him there. We don't want him. Not only do we not want him, but what is more, we must not have him!

For the nonce the American dye industry is at school, studying how it can best stand up against such competition from Germany as we know is bound to come, and it has a benevolent parent in the United States Government. Moreover, the Government gives every indication that it intends to act in the capacity of a rich relative, after our hero graduates, and give him every assistance. One of the major requirements of the preparatory course is that we learn the importance of establishing the unqualified friendship of the consuming public. The trade press should be a powerful instrument in the accomplishment of this, and it is one of the things to which the AMERICAN DYESTUFF REPORTER intends to devote itself most assiduously.

We must get together and keep "Hans" across the sea—in his own country!

DYE INDUSTRY TO MAKE ITS DÉBUT IN POLITICS?

That adequate protection for our dyestuff industry should be made one of the issues of the forthcoming election, is the belief of a writer in *Fibre and Fabric* who, in a recent issue, declares that mill workers and mill managers should demand a pledge to support such legislation from all Congressional aspirants before promising their votes. The article, which is of interest as presenting one phase of the views held among textile men, is herewith reproduced:

When one studies the wonderful display of American dyes shown at the recent textile exhibits, and realizes that

while this display gave prominence to an industry that was not considered possible before the war, and an industry that was only demonstrated in part, thinking people should see ample reason for a positive protection of such an industry in a tariff that will forever bar the one competitor that can ruin it in short order after the war ends and world competition is again in force.

Our dye manufacturers, our machinery makers and our cloth producers are now doing a profitable business and are thus compelled to pay the highest wage ever known in the textile and allied industries. With this high wage, labor is not particularly happy and there is continuous agitation for more money and shorter hours. The same necessity that now forces the higher wage will be glaringly responsible for reductions as soon as England and Germany enter in competition with us for world's trade, and wage reductions are going to bring serious industrial disturbances and general unrest that will put our mills and factories out of the running for foreign business in a way we cannot afford.

By wage equalization through increased tariff all this trouble can be prevented and we can go on indefinitely on the high American plan with our work people enjoying the same high wage now being paid. Under the present tariff we must compete with Europe's wage when the war ends, and it is not difficult to guess what the scale will be.

Mill workers and mill managers should demand a definite pledge of support for a protective tariff this fall when Congressmen come up for election, and only men promising to vote for this kind of a tariff should be sent to Washington.

"ALGARROBIN" FROM THE ARGENTINE

In the city of Santa Fe, province of Santa Fe, Argentina, a company has been formed to exploit a new dye material of vegetable origin known as algarrobin, according to a report from the United States Consul-General in

that country. The material is obtained from the wood of the carob tree and one of its applications is in dyeing the khaki cloth used in Argentine military uniforms.

"Algarrobin" is said to possess valuable dyeing properties. The fastness of the dye to fulling, light, washing, etc., is notable, as is also the uniformity of tone. These qualities, added to its moderate cost, are expected to render it of value to dyers. Used alone, it imparts a light brown color to any textile fibre—cotton, wool, silk, etc. These colors are fixed by means of appropriate mordants, according to the shade desired. There is a great variety of methods of employing the dyestuffs, and it should be easy for the dyer, with a little practice in its use, to obtain all the tints he requires.

In combination with vegetable extracts such as fustic, logwood, hypernic, etc., it gives a number of varied and fast colors, and it is also very suitable for use as a base in dyeing with coal-tar colors. By its use in this connection, an economy of from 50 to 90 per cent of the artificial color is claimed. For the loading of wool and silk it is said to be superior to all materials now used.

Real Khaki Color Being Produced

Khaki uniform cloth now being produced for the army by domestic textile mills is conforming more and more all the time to the regulation shade.

This statement was made recently by an expert dyer and tester in the woollens branch of the Clothing and Equipment Division of the Quartermaster's Department, in answer to a report that the lack of glycerine in soap now being used in the mills was causing a khaki to be produced entirely different from the original khaki color chosen by the Government.

According to the dyer such strides have been made by American mills of late that the khaki to-day is more true than it was ten years ago, and perfection is being approached with each dyeing. The mills are now nearly 100 per cent. perfect.

The Butterworth-Judson Corporation announce that their color and dyestuff laboratories are equipped and ready for service. It is also announced that the relations between the Butterworth-Judson Corporation and Frank Hemingway, Inc., under which Frank Hemingway, Inc., were the sole distributors of the intermediates and dyes of the Butterworth-Judson Corporation, has been discontinued beginning June 29, 1918. From July 1 the products of the Butterworth-Judson Corporation will be handled direct from its sales office at 61 Broadway.

Owing to the wholesale exportation of reserve stocks of German dyes remaining in China in 1914, the natural indigo industry, which once flourished in the Yenping district and was subsequently superseded by the manufactured product, is now reported to have fully regained its foothold, some 300,000 pounds being shipped during the past year into the Foochow district alone.

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A. P. HOWES, Editor and Publisher

COOPERATION

The National Aniline & Chemical Co., Inc., has recently sent out to a large number of clothiers, department stores and manufacturers of women's and men's clothing a letter in which the services of their chemical laboratories are offered for passing upon and making tests of samples of dyed fabrics.

It is, of course, common knowledge that for at least a year or two after the beginning of the present war all sorts of substitute dyestuffs were used by mills because of their inability to secure colors to which they had been accustomed, and there were also manufactured in this country great quantities of very poor colors which were, nevertheless, used because they were the only ones available. Because of these conditions great quantities of textiles came upon the market which were decidedly inferior in color qualities, and the public, and oftentimes the garment manufacturer as well, being uninformed as to real conditions, were misled, and found great difficulty in judging between what was good and what was bad.

The present action of the National Company in extending its laboratory facilities to all branches of the textile and wearing apparel trades constitutes an effort to correct this condition of uncertainty. It affords an opportunity for even the small clothing merchant to satisfy himself as to the character of the colors in goods which he handles and will make it possible for him to make intelligent complaints if the colors are not what they should be. The action is undoubtedly a step in the right direction and should be followed by all concerns who have the necessary facilities.

The letter, which is self-explanatory, follows:

"In the emergency existing for a few months after the outbreak of the war—the transition period before the establishment in this country of the present great artificial dye industry—many kinds of worthless dyes were used,—in some cases long after it was necessary, and the retailer and distributor of dyed garments commenced a campaign of explanation to the consumer to remove from their shoulders the responsibility of badly dyed fabrics. This explanation was based upon the assumption that in the absence of German dyes, good work could not be secured. The explanation became a habit.

"To make such a statement to-day is untrue and if continued after an opportunity has been given to investigate might be interpreted as German propaganda. This Company and its predecessors have for years invited the mills to submit their problems in dyeing, and the necessary scientific tests and reports have been made without involving the recipients in any obligation. It is proposed now to extend this facility to the garment manufacturers, to the retail dealers and to the department stores.

"To this end we are prepared to make tests of any of your fabrics and to report to you the quality of the dyestuff used; its comparative merits with the dyestuffs used prior to the war; its fastness to light, to washing, and any other requirements which you may be interested in. This will be done without charge and in accepting such service no obligation is incurred.

"Our sole object is to demonstrate the comparative merits of American and foreign dyes.

"For your information we hand you two publications of ours which will suggest to you the broad and stable basis upon which this American industry is now building. The exhibit recently shown at the Textile Show will again be open to public inspection between the fifth and ninth of August at the House of B. Altman & Company, New York City."

AMERICAN-MADE DYES IN FOREIGN MARKETS

An Analysis by Our Representatives in Colombia, England,
India, New Zealand, Portugal, Spain and Switzerland

FOR some time past the U. S. Bureau of Foreign and Domestic Commerce has been collecting facts and statistics for the benefit of our American dye manufacturers. The results reveal some little thought of possibilities for the future. As published in *Commerce Reports*, the organ of the bureau, we quote:

CHINA

By Vice Consul Andrew J. Brewer
Amoy, Apr. 19

In the Amoy consular district, as in practically every other part of China, the demand for dyes is satisfied mainly by domestic products, particularly by indigo. There is, however, an importation of dyestuffs to supplement those produced at home. In former years these came almost entirely from Hongkong, which received them direct from Europe for distribution among the outports of South China. Even now approximately 60 per cent of the dyes imported into Amoy are reexports from Hongkong, the other 40 per cent being of Japanese derivation. The European war, with its compulsory suspension from the market of German aniline dyes and the withdrawal of the large supplies which were formerly obtained from Belgium, seems now to have given American dye manufacturers their chance, in spite of the fact that at the present time there are no dyestuffs whatever of American manufacture imported into Amoy.

Introducing American Dyes in Amoy—Imports

The situation in Amoy, however, is peculiar. The imports of dyestuffs are not large enough to justify an American firm's keeping a foreign agent on the ground, and yet it is quite certain that the development of a local market

is hampered by the absence of such an agent. Three of the larger dye importers in Amoy (whose names may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices by referring to file No. 102106) at the present time control all the wholesale business, distributing to the small shopkeepers, but to trade with them it would be necessary to correspond with them in the Chinese language or to have them visited at intervals by a foreign representative with an interpreter. The most feasible way of introducing American dyestuffs into Amoy appears to be to establish an agency at Shanghai or Hongkong under foreign management, giving this agency all South China to be worked under its supervision. Only in this way can the difficulties of correspondence in Chinese and of the language in general be overcome.

The following figures show the value of imports of dyestuffs into Amoy during the past two years:

| Dyes and dyestuffs | 1916 | 1917 |
|----------------------|---------|---------|
| Aniline | | \$6,318 |
| Bark, mangrove | \$8,169 | 10,447 |
| Cinnabar | 1,204 | 1,547 |
| Sapanwood | 4,579 | 3,512 |
| Vermilion | 266 | 2,126 |
| All other | 5,356 | 6,078 |
| Total | 19,574 | 30,028 |

COLOMBIA

By Consui Claude E. Guyant

Although there are several cotton mills in Colombia making a fair variety of the cheaper and coarser grades of cotton cloth, no dyeing has been done in any of the textile factories until recently. Yarn used has been imported, principally from England, in the different colors desired, but a few months

ago a Barranquilla factory (Fabrica de Tejidos Obregon), the largest textile mill in Colombia, installed dyeing and spinning machinery and has commenced to dye Colombian cotton. So far it has used only sulphur black, it is understood that later on the dyeing plant will be enlarged and other dyes used. The dyes of this firm are all purchased in the United States. It is not probable that any other mill in Colombia will go into this business.

ENGLAND

By Consul Percival Gassett, Leeds

The distillation of both gas and coke oven tar is an important industry of Leeds. Benzole, carbolic acid, creosote oil, anthracene, and pitch, in which a large trade has been done with the Continent, are produced.

During the last quarter of a century considerable changes have taken place in the application of dyeing materials in the production of textile fabrics and leather. The use of natural dyestuffs in the form of extracts has developed largely, replacing in a great measure the dye material in its natural form. It is the custom to buy and sell extracts on guaranteed analysis of tanning contents and also to declare the shade of color by colorimeter test.

The principal dyewood and tanning extracts manufactured in the Leeds district are myrabolam, sumac, valonia, logwood, fustic, barwood, hematite crystals and paste, orchil extract, and indigo extract. Chrome tanning liquor, together with the necessary dyes, dressings, and finishes, is also manufactured for the production of leather suitable for boot manufacture.

Artificial Dyestuffs in General Use.

Natural dyes have within recent years been largely superseded by synthetic dyestuffs, formerly supplied principally by Germany. However, logwood, fustic, and catechu are still employed to a certain extent. The war has given a tremendous impulse to the manufacture of artificial dyestuffs, and in the Leeds district various firms have started their manufacture, although as yet on a com-

paratively small scale. The number of artificial colors manufactured in Great Britain before the war was probably less than 100, and the number now being prepared here is about 250, the object of the manufacturer at present being to supply his customers with the dyes most in demand.

The great difficulty the British manufacturers faced at the beginning of the war was the lack of trained chemists who could assist in the making of these colors; although every effort has been made to overcome this difficulty, progress has been slow, owing to the requirements of the military authorities.

The University of Leeds, in conjunction with the Universities of Oxford and Liverpool, has devoted one of its main laboratories, under the charge of Prof. Arthur G. Perkin, son of the founder of the artificial-color industry and the discoverer of mauve, to work on color manufacture, and is assisting the color makers in the Leeds district in every way possible. This university, which has probably the best-equipped department for the study of color chemistry and dyeing in Great Britain and the equal of any on the Continent, has always devoted a portion of its curriculum to the study of artificial dyestuffs, and now, being fully alive to the necessities of the situation, is making extensive preparations to cope with the difficulty in the future, not only by enlarging its dyeing and color laboratories, but also by offering much greater facilities to the young men of the Leeds district for undertaking such a course of training.

(Lists of the artificial-dye manufacturers, drysalters or middlemen, and dealers in the Leeds district may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices by referring to file No. 100573.)

By Consul Horace Lee Washington,
Liverpool, March 28.

*American Dyes Used in Liverpool
District*

Effort is being made by English manufacturers of dyes to meet the present abnormal demand occasioned by the usual sources of supply being no longer available, but it is not practical at this time to forecast the result of these efforts in the production of all the shades of color required. Two firms in Liverpool interested in the subject state that large quantities of dyes are imported into this country from the United

States. One of these firms says that it is ready at all times to purchase from any reliable firm in the United States who can offer the best value. This firm manufactured vegetable dyes in this country for many years, but on account of the impossibility of producing logwood and fustic extract here in competition with manufacturers in the West Indies and in the United States, they and the other dyewood-extract manufacturers in the United Kingdom have ceased to produce these dyestuffs.

(The names of the Liverpool firms mentioned in this report can be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices by referring to file No. 99552.)

INDIA

By Consul Stuart K. Lupton

Imports of dyes into the Bombay Presidency from Italy and Switzerland have declined to a very large extent since the war, and the supply from Germany and Belgium has practically ceased. These countries were formerly the principal sources of supply for aniline dyes, while Germany and the United Kingdom furnished most of the alizarine dyes imported into Bombay. The United Kingdom has continued to supply alizarine dyes, practically controlling the trade in 1917, and has steadily increased its shipments of aniline dyes. Imports from the United States began in 1916 with 2,086 pounds of aniline dyes, valued at 7,927 rupees (\$2,572), and in 1917 amounted to 370,869 pounds, valued at 3,865,068 rupees (\$1,253,956).

Prices have risen steadily, as may be seen by comparing the total imports of aniline and alizarine dyes in 1917, which amounted to only 886,912 pounds, valued at 5,667,693 rupees (\$1,838,792), with those for 1914, which were 11,885,515 pounds, valued at 7,628,764 rupees (\$2,475,022).

NEW ZEALAND

Consul General Alfred A. Winslow,
Auckland, March 26

There is a growing demand for American dyes in New Zealand and a

readiness on the part of the manufacturers to examine and test samples sent by American firms, and to order from these samples if the product measures up to the standards required here.

Although there is not much done in manufacturing or dyeing here, except in the woolen mills and in a small way in the principal centers, in the aggregate the imports are considerable each year. For 1916 the imports of dyes were valued at \$202,724, of which the United Kingdom supplied \$168,760 worth and the United States \$7,022 worth. These dyes enter free of duty from all countries, with the exception of a 1 per cent. war tax, which is collected on all imports.

(A list of dyers and woolen manufacturers in New Zealand may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices. Refer to file No. 100310.)

PORTUGAL

Consul General W. L. Lowrie,
Lisbon, May 6

American-made dyes are in demand in Portugal, and considerable quantities have been imported from the United States to supply the existing market. The country has no extensive manufacturing interests in comparison with its other industries, and the annual imports of dyes are valued at approximately \$500,000. In 1914, the latest year for which complete statistics are available, Germany supplied about one-half of the entire demand. Owing to large stocks and also to the dyes landed from one of

the German steamships taken over by the Portuguese Government, the factories were able to secure their normal supply for some time after the war began, but during recent months dyes have been imported from Switzerland, the United States, Spain, France, and England, ranking in importance in the order named.

Opportunity for American Exports to Enter Market

It should be understood by American manufacturers that the present opportunity for entering and holding this market is an exceptionally favorable one. Cotton, woolen, silk, and leather factories are eager to secure proper dyes. Just now their business is prospering to an unusual degree, and they are willing to meet the requirements of the manufacturer in order to secure an adequate supply of dyes.

The Portuguese importer faces almost prohibitive freights, unexpected delays in shipments, extremely high insurance, higher exchange rates, etc. Dyes cost in Lisbon 15 to 20 times what they did under normal conditions. The business is in the hands of commission importers who meet the requirements of the American sellers and then supply the factories on 30 days' or more credit.

Oporto, the metropolis of northern Portugal, is the chief market for aniline dyes in this country. The American consular agent at that port reports that the demand is principally for sulphurous dyes, with direct dyes and basic dyes next in importance. He further states: "At present, owing to the great

scarcity of aniline dyes, natural coloring woods like campeachy and quercitron are being used extensively. Aniline dyes are still obtainable from Spain, Switzerland, England, and the United States. Formerly the business here was in the hands of Germans, but Portuguese firms have taken over the importation. One concern has imported American dyes to a certain extent, but complaint is made of the irregularity in quality. Samples are of no value under irrevocable banking credits, and results may be verified only by actual use of the dyes. An expert has suggested Government control of manufacture of dyes, with accompanying certificate of density or concentration."

SPAIN

Consul General Carl Hurst,
Barcelona, May 4

Spain is at present a favorable market for American dyes. The importations of dyes from England and France are not made with the same facility and frequency as heretofore. Aniline dyes that were formerly imported from Germany are not found here now, although aniline dyes of Swiss origin are advertised and orders solicited. As is known, the majority of dyes derived from coal tar came from Germany, and Spanish statistics for 1917 give the second place to Switzerland. The United States occupies the third place among countries that exported to Spain in 1916, with dyes valued at \$24,077. Three-fourths of the indigo imported likewise came from Germany. The vegetable dyes, as specified in the Spanish statistics for 1916, were imported into Spain in the following quantities: From Argentina, \$368,790; France, \$87,210; Great Britain, \$72,390; United States, \$119,320; and all other countries, \$47,690; making a total of \$695,400.

The greater part of mineral dyes in powder or in lumps, ground in water or oil, came principally from France and Great Britain. The participation of the United States along this line has been very slight.

Limited production of Dyes in Spain

There seems to be an especial opportunity for American dye manufacturers to send their products to the Spanish market, not only to replace imports formerly supplied by Germany, but also to help out the insufficient production of dyes made in Spain. The Spanish manufactures of dyes is hampered by the lack of certain raw materials. On account of the lessened imports of petroleum, dye factories have not been able to get sufficient supplies of benzol, and there is also decided lack of coal tar. The Spanish press has devoted considerable space to discussion of the lessened production of lampblack used for printing inks.

In the consular district of Barcelona is centered the cotton spinning and

weaving industry of Spain, and the dyeing establishments in connection therewith occupy an important place. There are in the country about 80 dye works, and there is, furthermore, an important business done in dyes for leather and paper. Public attention has been called to the scarcity of dye factories in Spain, and very recently in a lecture given at the Academy of Sciences of Barcelona on the subject of coal-tar dyes the lecturer dealt upon the importance of extending the manufacture of aniline dyes in Spain in union with German firms and with the privilege of using their patents. There is no doubt that the Spanish market is capable of absorbing a large quantity of American dyes and colors if transportation facilities are available and prices could be made acceptable. The quotations for dyes in Spain have been in the past largely governed by those of foreign markets, especially of Paris.

(A list of firms in Barcelona who use wholesale quantities of dyes and colors may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices by referring to file no. 102567.)

SWITZERLAND

Vice Consul Frank Bohr

Zurich, Apr. 22

Swiss dyestuff consumers have always been greatly interested in dyestuffs of high concentration, excellent quality, and reasonable price. The origin of the article in general does not matter if the quality fulfills the requirements in every respect. Preference is always given to the cheaper product, provided the quality is equally good and renders the same services, but if it should be still superior or offer other advantages, the prospects of a successful competition will greatly increase. Therefore, if American dyestuff manufacturers are able to supply Swiss dyers with first-class dyes, the quality of which is in no way inferior to that of competing dyes, and if they can place these on the market at prices that will correspond with the Swiss prices, business conditions seem to indicate that there would be a possibility of

creating a permanent demand for and a consumption of American dyestuffs in Switzerland.

New dyes of heretofore unknown qualifications would undoubtedly attract the consumer's attention first, but also dyes already known to the trade and commonly in use will receive consideration if they are able to compete in price.

Competition with German Market— Middleman Profits

The Swiss business man is rather conservative, and, unless he can be assured by actual facts of what might be called a profitable transaction, no obligations of any kind would induce him to sever old connections simply to take advantage of any opportunity that may be offered.

Of course, American dyestuff manufacturers should never lose sight of the fact that, especially in their line, the German competition on the Swiss market is powerful and that it had taken on such dimensions before the war that even the domestic industry was hardly able to secure a small percentage of the

Swiss trade. However, positive assurance may be given to Americans engaged in the manufacture of dyes and dyestuffs that there exists absolutely no prejudice against the use of their products in this country, and, as already stated, the quality and the price are the most important considerations.

In no case could Swiss consumers be interested in American dyes if the price is increased by the profits of middlemen. In order to avoid such increase it is of great importance that business transactions in this line should, wherever possible, be conducted between the manufacturers and the consumer direct, or at least between the manufacturer's agent in Switzerland and the consumer, in order to prevent the dyes from passing through the hands of a number of middlemen before they reach their final consumers.

Other Conditions Affecting American Trade

American manufacturers also must endeavor to adapt themselves to the customary conditions prevailing in this country, especially with regard to credit terms, discounts, and other particular requirements of each individual customer. Circular letters and catalogues printed in the English language, with price quotations in United States currency, for goods delivered f. o. b. factory or American seaport, weights in pounds, etc., will probably receive little or no attention by Swiss importers and

consumers after the war. To-day conditions are entirely different, as most of the former sources of supply are shut off and Switzerland is compelled to buy wherever she can, but when the war is over and even greater and more intensive struggle for business among the competitors will again begin, and at that time American manufacturers should be ready and should have made the proper connections with this market.

French and German are the principal languages spoken in Switzerland, and correspondence should, if possible, be conducted in one or the other. The fact that prices should be quoted in Swiss francs, weights given in kilos and grams, etc., may seem immaterial details, and yet they are sufficiently important and should receive careful consideration in the preparation of offers to Swiss firms.

It may be of further interest to American dyestuff manufacturers to know that the supplying of American half-finished products for the manufacture of dyes here would also be of great interest and of great importance to Swiss concerns engaged in the manufacture of dyes and dyestuffs.

J. E. Kenworthy Co., Warren, R. I., have recently been incorporated with a capital of \$100,000, to operate as a dyeing and bleaching plant.

Phoenix Dye Works, Clearfield and Witte streets, Philadelphia, will reorganize and increase its plant to dye and bleach silk and cotton hosiery and install a bleaching department.



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THE USE OF GERMAN FORMULAS AND PATENTS

Now Is the Time for American Manufacturers
to Familiarize Themselves With New Colors

THERE has been a great amount of space devoted in the press during the past few months to the information that somebody in Switzerland had secured possession of over 250 recipes for the manufacture of important German dyes, and that the same had been placed in the hands of color producers.

The belief is current that the manufacture of artificial dyes is based upon methods which are carefully kept secret by the German makers. This is, however, far from the case. As a rule, all essential features of each process are carefully protected by patent claims, the details of which are available to the public. Several thousand patents for artificial colors have been issued by the United States Patent Office, chiefly to German inventors, and a printed copy of any of these can be obtained for five cents.

While apparently, and technically, such a patent should reveal all that is needed for an intelligent chemist to reproduce the inventor's results, yet, as a matter of fact, the great majority of them are so skilfully composed and worded that it is by no means an easy matter to ascertain from their con-

tents how to make a given dye. In the first place, there is no mention by name, in a patent, of the color or colors known to the trade, which are placed under protection. While this circumstance offers certain difficulties to the tyro in dyestuff production, it is a matter of slight concern to the large companies engaged in this branch of industry. All new colors are subjected to a most careful and searching laboratory examination, and the true relations to patents are fully established. Investigations from the scientific standpoint are also made in the laboratories of universities and technical schools, and by this means a certain literature is gradually created in connection with a color of prominence.

From neither of these sources, however, comes the exact information as to the method in practical use by a company for the most economical production by it, on a large scale, of a given dye, nominally associated with a published patent. The latter may be very broad in its terms, covering several classes of reactions, and the use of numerous materials of closely allied nature. Thus, a patent may

specify, for the production of a certain class of colors, the use of aromatic amines or their homologues or derivatives. Certain illustrative examples may be given. They may contain no actual allusion to the actual coal-tar compound employed in making the dye in question, or the chemicals with which it reacts. There are hundreds of possibilities covered by the working of the patent. An exhaustive analytical study may throw light upon the question of the coal-tar intermediates employed and yet give absolutely no indication as to the chemicals to be used for oxidation, condensation, reduction, etc.

Again, the question of materials may be comparatively simple and the requisite information along these lines may be clearly given in the patent. But it may fail, however, to supply the needed data on relative quantities, time required, temperatures to be maintained and other data of a physical nature. It is highly probable that the "recipes" secured in Switzerland refer to the accumulated experience in this latter field, concerning the production of staple dyes, which may have been gained through a long series of years by some one of the German color combine.

In regard to the older dyes, the triphenylmethane colors, most of the azo colors, the Eosine class, etc., chemists now know pretty accurately just what intermediates are to be employed, and in what quantities. It is, however, inevitable that any firm, engaged for a long time in the production of them, has perfected numerous minor details of treatment which result in a lower cost of production or a more perfect adaptation to the specific demands of certain of their consumers.

The possession of such knowledge

is not absolutely indispensable in the building up of the dyestuff industry in another country. The essential tintorial values of the overwhelming majority of the standard, staple dyes, can be duplicated, in this land, for example, without real difficulties being encountered. Our quick-witted American chemists have rapidly improved upon known processes in this field, as they do in others.

It is in the coming contest for holding the domestic market and for gaining the foreign markets, that the possession of such detailed knowledge as is outlined above would prove of great value. More or less information of this character is constantly being secured by American manufacturers of colors as they engage chemists of experience and proven worth from foreign dye works (Swiss in most cases), each of whom possesses a tolerable range of familiarity with a limited number of colors. It is not infrequently the case that such chemists are restricted by formal contract provisions from communicating information gained while in the employ of a given concern. Despite such provisions, however, the information is bound to become eventually known.

A year or so ago there was a chemist in Switzerland who had been for a number of years at the head of a French factory of a leading German color company. After the works had been commandeered by the French government, and he was retired, he was quite ready to consider an American connection based upon his intimate knowledge of the manufacture of a large variety of dyes. It may be possible that his repertoire forms the basis of the statements referred to above.

Questions concerning the use of German patents and dye formulas recall the eagerness with which England took advantage of her opportunity to avail herself of them. It was not so long ago that British Dyes, Ltd., applied for permission to make dyes covered by seventy-seven patents. These concern chiefly vat dyes obtained from anthraquinone derivatives, and include also a number of

important azo colors as well as sulphononic dyes in other groups, especially those producing black, brown and blue shades.

In this country regulations were formulated by the Federal Trade Commission under which patents owned by enemy aliens could be licensed for manufacture by American citizens. These regulations follow the law closely in safeguarding the interests of patent owners, who must be reimbursed for the use of their inventions, and provide that licenses shall be issued only when the interests of the public demand it to supply a demand not at present being met. The licensee must also prove his ability to make the dye in question.

Licenses are to be granted for the life of the patent, and not merely for the duration of the war, and this is in direct acquiescence to an objection proposed by the dye interests that it would be prohibitive to go to the expense of installing costly machinery if they would have to surrender their rights to make the dyes after the war. Exclusive licenses are not granted to individual concerns. The licensee is required to file with the Federal Trade Commission a semi-annual report of the business done.

In exceptional circumstances, the use of trade-marks, copyrighted labels and similar trade devices is granted in connection with the use of the patents.

In the face of all this, it is not to be forgotten that the broader our grasp of knowledge of varying operations, the stronger will be our hold on the general situation and the greater our ability to lower costs of manufacture so as to effectively ensure the continuance of the domestic output of individual dyes.

One great source of power in a German dyestuff company is their ability to concentrate the experience of a large group of talented chemists on any current problem. Each one contributes from his own special field a helpful idea and aids in simplifying the final solution.

For this reason it is extremely desirable that the American coal-tar chemical industry should utilize the present opportunity to make as large a circle as possible thoroughly intimate, by actual practice, with all the recent progress in branches which have hitherto been completely closed to us.

A business man in France desires to purchase and to secure representatives for the sale of aniline dyes such as marine blue and other solid colors of very good quality for use in the French textile business. Catalogues and price lists, as well as samples, if possible, should be submitted. Cash will be deposited in an American bank in France for payment. Correspondence should be in French. Reference. Those interested should refer to Foreign Trade Opportunity Number 27,189 at the U. S. Bureau of Foreign and Domestic Commerce or its branch offices.

AN AMERICAN NOMENCLATURE FOR AMERICAN DYES

The claim is advanced that the position of the American coal-tar color industry would be vastly strengthened if all the dyestuffs made regularly in this country should be given distinctly American names instead of the designations employed by the foreign inventors or currently employed by foreign manufacturers.

John Campbell & Co. have issued a pamphlet on the subject in which the argument is elaborated at some length. The presentation of the idea is quite forcible and merits consideration, as will readily be seen from the following extracts:

"The development of the American Dyestuff Industry during the past few years, dating from the time of the beginning of the great world war, is a record of achievement that well deserves an enviable place in the annals of American business. The reason for our neglect of this industry during the many years prior to the war is an open question admitting of many different, well-founded opinions. Be the cause what it may it is a universally recognized fact that the entire world depended upon Germany for aniline colors and all nations were almost wholly and surely pitifully unprepared to meet the conditions brought about by the shutting off of this source of supply.

"The American manufacturer has demonstrated to the world in a few short months that he is capable of building up a self-sustaining dyestuff industry. He has produced most of the simple colors and is now bringing out the more difficult colors; this the American manufacturer has done in the face of difficulties and obstacles

that to a less determined people would have been deemed insurmountable.

"Time, patience and a high degree of technical knowledge, as well as expensive equipment, are essential to the production of synthetic colors. The American manufacturer with rare faith in the ability of the American chemist has willingly invested his capital, cheerfully paid for the costly research work and necessary experiments and his faith in American brains has been rewarded by the joy of creating a great industry.

"But in this great industry representing even in its infancy an investment of many millions of dollars and created by countless days of effort, worry and anxiety while it was passing through the experimental stage, to be a permanent monument to the achievement of American business and chemical genius, or is it to be but a spasmodic industry, only bridging the time of the duration of the war until the German dyestuffs manufacturers cease making explosives and concentrate their efforts to the recapture of the business, the monopoly of which they so long enjoyed?

"This question is a momentous problem with ramifications entering into every branch of American commercial life. We will devote a little space to the consideration of but one aspect of this problem and discuss briefly the influence of nomenclature, as the Germans have practised it, upon the dyestuff industry.

"It seems that a myth went up and down the earth a few years ago, that the Germans were a race of supermen. When a man or a cult representing a group of men claims superiority in any special line of thought or endeavor and constantly reiterates that claim, the world either dismisses them from its mind as bores or eventually believes them. The Germans as a nation admitted their superiority and the world chose to believe them.

"The German nation has applied science to industry as has no other people. Even the influence of therapeutic suggestion, its recognized power to shape and dominate the opinion of others, has not been overlooked by

them, but has been applied to business. The recognized power of this suggestive art to shape and dominate the thought and opinion of others has been systematically used in their various forms of propaganda. The world has been told from time to time that the production of coal-tar dyes was a peculiarly German institution; that they could not be made by other countries. This statement was accepted as a fact in the days preceding the war, but when the source of supply was shut off the American manufacturer soon got busy and punctured this German myth. We are producing most of the widely used colors which we had been told were impossible of production outside the German factories, and our manufacturers are now actually bringing out some of those more difficult colors which it has taken German chemists many years to produce.

"But it is in the naming of thier colors that the German manufacturers have displayed real sagacity and genuine business acumen and it is with this weapon of nomenclature that the American manufacturer must fight back. Each German firm as it produced various colors naturally christened them with names. At first each name really described a shade or color or indicated to which chemical family or group the color belonged. Later this custom was changed; an arbitrary, copyrighted word being given as a name which identified the color as a product of a certain German factory. Where several factories were producing the same shade or color, each factory gave its own special name. For instance, several German firms were making the same direct cotton color, a bright blue shade: one manufacturer called this shade "Diamine Blue," another gave it the name of "Benzo Blue," while other names used were "Chicago Blue," "Oxamine Blue," etc.

"Now the American consumer will never willingly put himself in the position he occupied when the war shut off the supply of German colors. He realizes the necessity of having a dependable source of supply at home, and the only way this can be done is for

the consumer of dyes to support the American dyestuffs manufacturer. No American mill man should use the German trade words for the name by which he has known colors in the past; to do so would be playing right into the hands of the German business propagandist. Therefore, let us be loyal to everything American, and among other things designate the American colors by their American names."

In an attempt to discover incriminating evidence that they have been aiding the spread of German propaganda in this country, the past actions and personal belongings of Ferdinand Thun and Harry K. Jansson, who control three Philadelphia textile concerns, are being investigated by agents of the Department of Justice. It is claimed that these men have consistently aided pro-German writers and publications. The concerns referred to are the Textile Machine Works, the Berkshire Knitting Mills and the Narrow Fabric Co.

AMERICAN DYESTUFF REPORTER

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tions appreciated.

A. P. HOWES, Editor and Publisher

**PUBLICITY AND THE DYE-
STUFF INDUSTRY**

Since the outbreak of the war the American dyestuff industry has grown from a mere shell to a business of really gigantic proportions. This growth has been possible largely—in fact almost entirely—because of the absence of German competition. As the time approaches when this competition will be restored the question of how it is to be met is engaging more and more the attention of those most interested in a permanent establishment of our domestic industry.

There is no doubt that the factor which will contribute most largely to the success or failure of the efforts of American manufacturers toward making the industry permanent will be the attitude of the consumers of dyestuffs. By consumers is meant not only textile mills and others who use dyestuffs first hand in large quantities but also the general public who consume the articles in the manufacture of which American colors are used.

The technical difficulties concerned with the development of needed colors of proper character are being carefully studied and overcome with constantly-increasing rapidity by large manufacturers of dyestuffs. Once given the colors themselves, however, the attitude of the consumer becomes of paramount importance.

The most effective means toward shaping the attitude of the consumer is proper publicity. This is a question which has, to a certain extent, been neglected, but which will from now on demand the attention of the dyestuff industry in constantly increasing ratio. The first-hand instrument for the spread

of such necessary publicity and its accompanying propaganda of various types is the trade press. If the industry is to survive, the trade publications must have not only the whole-hearted support of the manufacturing element of the industry, but it must, as well, have the cooperation and confidence of the consuming element.

As has been repeatedly announced in these columns, the AMERICAN DYESTUFF REPORTER feels that its chief mission is to stimulate, in every way possible, the development of the American industry and to counteract German propaganda of every type whenever it is recognizable. In order to do this efficiently we must have the cooperation of every element in the industry. The American manufacturers of colors have been most appreciative of our efforts and have made it possible for us to continue our work through their generous advertising expenditures. It now seems to us that it is only fair to ask the color consumers of the country to bear a small portion of the expense of the work which we are carrying on.

In the ten months since the DYESTUFF REPORTER was established we have maintained a weekly circulation of 3,500 copies, reaching practically all of the large consumers of dyestuffs in whatever field they might be located. A large proportion of this circulation has been included in our free list. We feel that the time has now come when these consumers may reasonably be asked to pay for this service if they find it of value. There is another matter which weighs with us in this connection—the U. S. Post Office requires that before a periodical shall be registered as second-class matter the larger proportion of its circulation must be paid for by the recipients. We are very anxious to secure such second-class entry—first, because of the large saving in postage bills and, second because of the added dignity which such entry carries with it. The money which we would receive from a substantial increase in our paid circulation, together with the saving which would be effected in postage bills by second-class entry, would provide a sum which we could very probably use

for propaganda work of various types which we have discussed with leading factors in the industry and which we feel would be of very great value in assisting the spread of the proper sort of publicity for the American Dyestuff industry.

We now, accordingly, make the strongest sort of an appeal to those of our friends who are interested in furthering the development of the industry in this country and in making it impossible for the Germans ever again to become large factors in this market, to favor us with their subscriptions. Every cent of the money so received and the saving in postage bills which will be effected thereby will be spent to carry on the fight against the German dye ring.

There is a coupon at the bottom of this page. Will not those of our readers who are not now paid subscribers further the cause by signing and returning same to us to-day?

NATIONAL EXHIBIT AT B. ALTMAN & COMPANY

The exhibit of The National Aniline & Chemical Company, Inc., which was on view on the sixth floor of B. Altman & Company's New York Store during the week of August 5th, attracted an un-

usual amount of attention not only from the patrons of the store but from visiting buyers from out of town stores who are at this time in New York making their purchases for the fall season. The interest shown by department managers and sales people generally, both from the Altman store and out of town institutions as well, was very highly gratifying. Nearly all of them brought up for discussion with Dr. Matos, of the National Company, who is in charge of the exhibit, personal instances of difficulties which they had had with certain fabrics and asked for an explanation as to how these difficulties might be explained to customers without discrediting American-made dyes. In nearly every instance it was shown that the fabrics were faulty because of imperfect dyeing and not because the dyes themselves were of poor quality.

There is no doubt that publicity of this sort leading to the proper education of sales people in our department stores is a matter which should receive most careful attention from all who are interested in the American Dyestuff industry. These people come into direct contact with the purchasing public and are relied upon by the public to endorse the goods which they handle. If these sales people are unable to make satisfactory explanations in regard to their goods and simply take refuge behind the oft-repeated assertion that they "cannot guarantee American-made colors" an untold amount of harm to the industry is bound to result. If, on the other hand, they are able to show that the fault, if any, lies with the dyeing department at the mill which produced the fabrics, it will go far toward placing the blame where it properly belongs and obviating the tendency on the part of many fabric manufacturers to secure quick production at the expense of the permanency of colors.

The National exhibit will be more or less continuously on the move during the next two or three months, being booked to appear in various department stores as far west as Milwaukee and St. Louis. There is no doubt that the educational effect of this exhibition is a very decided step in the right direction.

DYEING MISCELLANEOUS FIBRES

By JOSEF LOEBL

The following article from the *National Dyer and Cleaner* takes up little-mentioned problems in dyeing, and is so comprehensive that it is herewith reproduced for the benefit of our readers:

LINEN, HEMP, LINEN AND COTTON UNIONS

To prepare these fibres before dyeing they should be boiled with soda ash, using from five to ten per cent. of the ash on the weight of the goods. If bleaching is necessary to obtain certain shades this may be accomplished by combining the "grassing" method with the chlorine bleaching process.

The dyeing of linen, hemp and linen and cotton unions is carried out in the same manner that cotton is dyed. In this connection, though, it should be noted that dyestuffs do not penetrate as deeply into the linen fibre as is the case with cotton, and, therefore, less dyestuff is required to produce a certain shade. For the same reason, when dyeing with substantive colors, the rate of absorption should be retarded by the addition of Turkey red oil, in the proportion of from two to three per cent. on the weight of the goods, soap or Glauber's salt. Less salt is required for the purpose than Turkey red oil.

Fastness is not required, as a rule, when dyeing hemp. However, it frequently happens that the dyer will be called upon to dye hemp strings with colors that will not mark off on white.

RAMIE

In general the properties of ramie are similar to those of linen and the dyeing operation is carried out in a similar manner.

JUTE

For many purposes jute is dyed unbleached and needs only to be cleaned by working in boiling water before the dyeing is done. If, however, special value is attached to purity and brightness of shade, the jute must be bleached by one of the following methods:

1. With bleaching powder using the

same process as for cotton. One-half pound of the bleaching powder should be used for each one hundred pounds of yarn.

2. With potassium permanganate and sulphurous acid, using the same process as for wool.

When good fastness to light and thorough penetration is desired the acid dyestuffs are particularly suitable. The material should be entered into a concentrated bath containing the necessary quantity of dyestuff and one-third pound of alum. The dye liquor should be brought to a boil and kept at this temperature for thirty minutes. The jute

should be worked for an additional thirty minutes as the bath cools.

The dyebaths do not exhaust, especially when dark shades are being dyed, and can be used for additional lots after replenishing with dyestuff and alum as required.

For one hundred pounds of jute yarn use one hundred gallons of dye liquor when dyeing light shades, and from one hundred and fifty to two hundred gallons when dyeing dark shades. If the dyeing is being done in a copper dye kettle three ounces of ammonium sulphocyanide should be added to each one hundred gallons of the bath to prevent the shade from being dulled.

Basic dyestuffs are suitable for dyeing jute when it is desired to dye heavy shades at a low cost. Enter the unmordanted yarn into the cold bath, adding the basic dyestuff, which has previously been well dissolved, in small amounts at a time. Heat the bath slowly to a temperature of from one hundred and forty to one hundred and fifty degrees F., after which shut off the steam and dye slowly for thirty minutes longer.

For light shades the proportion of jute to liquor should be one to twenty; for darker shades one to fifteen. If there is difficulty in obtaining level dyeings, add one-fourth pound of alum for each one hundred pounds of yarn. When dyeing with Iodine Blue add one-third pound of alum, bring the bath to the boil and boil for fifteen minutes. Dyeings with better fastness to rubbing and water may be obtained by an after-treatment with about one pound of tannic acid, or a corresponding quantity of some other tannic matter, in a fresh, lukewarm bath.

Jute dyed with the direct colors possesses good fastness to both water and rubbing. The goods are worked for

thirty minutes at the boil, adding from ten to twenty pounds of crystallized Glauber's salt to the bath, or from five to ten pounds of calcined Glauber's salt or common salt. When dark shades are being dyed the goods should be worked for thirty minutes longer while the bath is cooling down. For dark shades the dye bath should contain one hundred gallons and for light shades one hundred and fifty gallons for each one hundred pounds of yarn.

Red and pink shades are produced on jute with the Eosine dyestuff. A concentrated bath is prepared with the addition of from twenty-five to fifty pounds of common salt. The goods are entered while the bath is cold or lukewarm, the bath is brought to a boil, the steam shut off and the dyeing continued for an additional thirty minutes. The proportion of the goods to the liquor should be one to ten. The bath is not exhausted and may be used for further lots by the addition of further dyestuffs and about ten pounds of common salt. The following dyestuffs are suitable for this work: The Eosines, Crythrosines, Phloxines, Rose Bengals and Rhodamine B. If the fastness to light of the dyestuffs given above is not sufficient, Rhodamine B should be used shaded, if necessary with Auramine II, and dyed with the addition of acetic acid.

The sulphur colors are seldom used for dyeing jute, but they are suitable for the production of shades especially fast to light and washing. Inasmuch as the cleaner and dyer seldom, if ever, uses sulphur colors no mention of the process will be made here.

COIR

Coir is dyed in either the raw or bleached state. Bleaching powder, extensively used for bleaching cotton and jute, is also suitable for bleaching coir. Other bleaching agents used are hydrogen peroxide, sodium peroxide, potassium permanganate, etc. Good results can also be obtained with some of the patented bleaching preparations on the market.

The processes used for dyeing coir are similar to those used for jute, but

the following supplementary details are worthy of attention:

When dyeing with acid aniline dyestuffs allow the goods to cool down in the bath after the dyeing is completed, and consume from two to three hours in the dyeing operation. When large quantities of Orange II are used add about one-half pound of alum for each one hundred pounds of coir yarn. If difficulties with regards to leveling are met with, when using the basic dyestuffs, add about one-half pound of alum per one hundred pounds of yarn. When dyeing with the Eosine dyestuffs, add from twenty to thirty pounds of common salt per one hundred gallons of dye liquor.

STRAW

Boil the straw plait for from ninety minutes to two hours, adding, if desired, one pound of sodium acetate per one hundred pounds of material. In this connection it should be noted that while the sodium acetate assists in the boiling out operation it also causes a yellowish ground shade. A slight addition of tartaric acid when boiling out has the contrary effect, making the material lighter. To obtain very bright and clear shades, first bleach the straw with hydrogen peroxide and then treat it with Blankit as described below:

Steep the material for several hours at a temperature of from eighty to one hundred degrees F. in a solution of hydrogen peroxide prepared by dissolving one and one-half pounds of oxalic acid in ten pounds of soft, cold water. Add one pound of peroxide slowly, stirring the while. Then add to the bath enough

sodium silicate to make it slightly alkaline. The straw should be rinsed when removed from the peroxide bath and then steeped for several hours in a solution of Blankit made in the proportion of ten pounds of Blankit to each one hundred gallons of water.

The Blankit solution may be used for further lots by adding one-third of the original amount of the preparation. To hasten the bleaching action the bath may be strengthened by adding only one-half of the water given above.

The straw should be dyed at the boil with the addition of from one-half to one pound of tartaric acid, or one-half to two pounds of acetic acid (nine degrees Tw.) until it is sufficiently dyed. On an average of from one to three hours will be required. The bath should then be allowed to cool down and the material left in it for an additional hour.

When dyeing straw with basic dyestuffs all of the acid should be added to the dye bath at once but the dyestuff, previously dissolved, should be added in small portions. When using Auramine II with other dyestuffs add it after the boiling is completed. Acid dyestuffs should be added at the beginning of the process together with the necessary acid. When dyeing in a copper kettle add three ounces of ammonium sulphocyanide to each one hundred gallons of the dye liquor to prevent dulling the shade.

The following products are suitable for dyeing straw. Those marked with an asterisk are basic dye, the others acid:

Yellow—Auramine II; Tartrazine

H: Primazine G; Metanil Yellow extra PL; Azo Plavines; *Rheonine A; Euchrysine G and RR.

Orange and Brown—Orange II; *Chrysoidine A, R and L; *Vesuvine B, BL, BLR and OOO extra.

Red—Fixing Scarlet GR; Scarlet RA; Brilliant Scarlet P; Fast Scarlet P; Fast Red AV; *Saffranine T extra; *Rhodamine 3B, B, G, 3G.

Violet—*Saffranine MN; Acid Violet 4RN; *Magenta Powder A, AB; *Diamond Magenta colors; *Cerise colors; *Iris Violet; *Methyl Violets; *Marine Blues; *Crystal Violet; *Anthraquinone Violet.

Blue—Cyananthrol BGA, BA; Anthracene Blue SWGG extra; Brilliant Anthrazurel; Anthraeyamine Blue SR extra paste, SR extra powder; *Methylene Blues; *Dark Blue R, B; *Cotton Blues; *Nile Blues; Neptune Blue B.

Green—Wool Green S; Neptune Green S, G, SBN; *Diamond Green G, B.

Grey—Nigrosine X.

Black—*Jute Black B; *Straw Black; Jet Black.

CHIP

Thoroughly wet out the material in hot water before dyeing and bleach it, if necessary, with chloride of lime by the same methods used for bleaching straw. Dye with basic dyestuffs with the addition of from one to two pounds of acetic acid (nine degrees Tw., thirty per cent.) or alum. Commence the dyeing operation cold, raise the temperature to one hundred and fifty degrees F. and let the chip remain in the cooling bath for from thirty minutes to one hour.

Dye with acid dyestuffs with the addition of from two to three pounds of acetic acid (nine degrees Tw., thirty degrees) for from fifteen to thirty minutes at the boil, afterwards allowing the material to remain for from one to two hours in the boiling bath.

Dye with substantive dyestuffs at the boil for from fifteen to thirty minutes with the addition of ten pounds of common salt or calcined Glauber's salt, or twice as much crystallized Glauber's salt, afterwards allowing the material to steep in the cooling bath for a short time.

HORSE HAIR AND PIG BRISTLES

Thoroughly clean the material with a warm solution of soda and soap before commencing the dyeing operation. The dyeing may be performed with acid, after chromed, basic or substantive dyestuffs depending upon the fastness desired and the use to which the material is to be put.

To dye black, the shade most generally in demand, use the Palatine and Mgalma Blacks. If greater fastness is desired the Palatine Chrome Blacks or Diamond Black F may be used.

SISAL

Black is the color most generally dyed on sisal. For this and other shades work with the substantive dyestuffs in the same manner as for cotton. Dye at the boil with the addition of ten per cent. calcined Glauber's salt and one per cent. of soda ash for one hour. Let the goods cool in the bath and rinse. Cotton Black E extra is the most suitable for dyeing this material.

SWISS TO SAFEGUARD CONSUMERS OF THEIR PRODUCTS FROM GERMAN TRICKERY

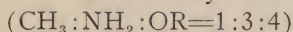
Of interest to dye consumers should be the announcement, through the *Journal de Geneve*, received at the U. S. Bureau of Foreign and Domestic Commerce, that steps are being taken in Switzerland to prepare against the danger of attempts being made to pass off German goods as goods of Swiss origin after the war. This effort, says *Commerce Reports*, takes the form of the institution of a national Swiss trademark. Promoted by the Geneva Chamber of Commerce, an association known as a "Syndicat pour L'Exportation Suisse" has been organized.

The controlling committee of this syndicate, consisting of fifteen members, will have its head office in Geneva. The object of the "S. P. E. S.," as the organization will be generally known, is to promote the exportation of genuine Swiss products. It has no pecuniary aim. As owner of the mark "S. P. E. S." indicating Swiss origin, it will give its members the right to use this mark for goods which are the product of Swiss soil and Swiss industry, and also for goods which have undergone in Switzerland such manipulation as to confer on them a new character. This, of course, would include dyestuffs manufactured from bases or intermediates obtained elsewhere. Membership in the S. P. E. S. is confined to native-born Swiss citizens and to those who have been naturalized for a minimum of ten years.

A NEW DISAZO DYE

Dr. Rudolph Schule, of Frankfort, (Amer. Pat. 1,241,153; Sept. 25, 1917), describes a new disazo dyestuff which yields very fast green shades on developing with phenols and various other aromatic compounds.

The starting point is the diazo compound obtained from diazo-p-nitro-benzene and aminocresolalkylether



where R denotes an alkyl group. This is subjected to further diazotation with

m-aminophenyl-8-oxy-1.2. naphthimidazole-3.6-disulfonic acid in alkaline solution. The disazo dyestuff thus obtained dyes cotton bluish black shades. These may be developed on the fiber, yielding brilliant green shades by further diazotising and developing with 1-phenyl-3-methyl-5-pyrazolone, phenol, cresol or resorcinol. Brilliant green shades are likewise obtained by after-treatment with p-nitrodiazobenzene. The developed dyeings are of good fastness to washing, soap and light.

The process is illustrated by the following example:

The diazo compound obtained from 13.8 kilos p-nitraniline, 35 kilos hydrochloric acid and 6.9 kilos sodium nitrite, is allowed to run into a solution of 13.7 kilos aminocresolmethylether with 11.5 kilos hydrochloric acid, cooled down to 0° C. by the addition of ice. The formation of the aminoazocompound is complete after about 4 hours' standing. It is further diazotized by the addition of about 11.5 kilos hydrochloric acid and 6.9 kilos sodium nitrite, and then allowed to run into a solution of 43.5 kilos m-aminophenyl-8-oxy-1.2-naphthimidazole-3.6-disulfonic acid, rendered alkaline with sodium carbonate. The dyestuff is salted

out from the warmed solution by means of common salt, and filtered off.

The dyestuff dissolves in water with a bluish black color, in concentrated sulfuric acid with a green color. The bluish black shades on cotton are turned into a brilliant green by developing with phenylmethylpyrazolone, into a green shade by developing with resorcinol, phenol or o-, m-, and p-cresol.

By aftertreatment with p-nitrodiazobenzene, brilliant green shades are obtained.

Want Bleachable Dyes Used

A request has been made to the United States Quartermaster Department that the Government use dyes in coloring uniform cloth which will be more easily removable than the dyes used at present. This request has come from paper manufacturers who depend upon cuttings and waste material from garment factories as their source of raw supply, and who are finding the refuse from the manufacture of army uniforms almost impossible to bleach.

Usually the paper manufacturers are able to get such stock as goes into the making of blue overalls and other bleachable goods, but with the Government at present requiring so much machinery in the making of olive drabs and khaki cotton goods the more bleachable materials are almost unobtainable.

It is not thought the request of the paper manufacturers will bring about any change in the specifications of the

dyes to be used, but information has been forwarded to them as to the best methods of bleaching, and it is expected that this to a great extent will aid them in their business.

Renewed evidences of interest on the part of dye manufacturers in the coming Fourth National Exposition of Chemical Industries is shown by the determination of Buffalo chemists and dye men, including Drs. Watkins and Derrick, of the Schoellkopf plant of the National Aniline & Chemical Co., and a number from the Donner company, to journey east in order to attend. The last named concern is building a \$7,000,000 plant for the production of toluol and other chemicals.

Representatives of something over 700 textile mills are convening this week at Atlanta, Ga., to hear Government plans for utilizing funds provided by the Smith-Hughes act whereby the State or local boards of education will receive assistance in establishing vocational training in textile communities. The mills represented are all located in the southeastern part of the country.

Tentative plans are being drawn up for the National Aniline & Chemical Co.'s proposed two-story, 40 x 85 brick addition to its plant at Ditmas avenue and Eighty-third street, Brooklyn, N. Y.

Much satisfaction has been expressed by members with the operations of the newly organized Master Dyers Exchange of New England, which has now been in active existence a little more than a month.

Fresh bulwarks for the dye industry of the future are indicated by the report that the Sloss-Sheffield Steel & Iron Co. of Birmingham, Ala., is considering with Government officials the erection of a \$2,000,000 by-product coke oven plant.



AMERICAN DYESTUFF REPORTER

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By Dr. Lewis J. Matos

The Fastness of Dyestuffs to Light and Ultra Violet Ray Exposure

By Dr. E. Wallace Pierce

A New Class of Vat Dyes

THE
American Dyestuff Reporter

will issue two

Special Numbers

in connection with the

*Fourth National Exposition
of Chemical Industries*

to be held at

Grand Central Palace, New York

September 23rd—28th inclusive



Reservations of Advertising Space Should be Made at Once

AMERICAN DYESTUFF REPORTER

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No. 8

MARS AND THE GOLDEN RULE

After the War the Dye Industry Will Need the Government's Help—The Government Needs YOUR Help NOW!

SOME will have it that rules are made to be broken, but it will be found that in all instances these self-appointed arbiters are referring to man-made rules. Man, as he journeys through life, encounters more rules than one could menace with the proverbial stick. He finds them in all shapes and in assorted sizes—children's, ladies', misses' and gents'—and all are intended for his guidance. He heeds or ignores them in varying degrees, according to what manner of individual he happens to be.

Those made by man he often flouts—and gets away with it, too, as likely as not. But those set down by nature he side-steps at his own peril, for nature, as the reader may possibly have heard somewhere, is inexorable when it comes to the eye-for-eye and tooth-for-tooth idea. However, this is somewhat beside the main theme, which was intended to lead playfully up to a consideration of the alpha and omega of nature's rules—the justly celebrated Golden Rule.

Let the reader be not alarmed. If the opening bars of this homily smack too strongly of a theological discussion to suit his tastes, he will soon find it coming back to more material things.

We will merely pause to point out that although this paragon of rules was supposed to have originated with the advent of the Christian era, it is a safe surmise that it was and still is unconsciously obeyed and practiced by more races that never heard of it in their lives than any other.

The dyestuff industry is shortly to have an opportunity of practicing it. The United States will next month call upon the men and women of this country to support a great Government loan to aid in winning the war. The issue of bonds for the Fourth Liberty Loan will equal or exceed \$6,000,000,000. The tentative date for opening the sale of the new certificates is September 28. It will continue about three weeks.

It has been stated that the nation's war program will necessitate the expenditure of \$24,000,000,000 during the fiscal year ending June 30, 1919. This money will be raised in two ways: by taxation and by the issue of bonds.

Taxes of all kinds added \$4,000,000,000 to the nation's treasury during the past fiscal year, when total expenses were between twelve and thirteen billion dollars. We cannot contemplate doubling the national budget without increasing the tax income in the same ra-

tio. Plans are now under way to make substantial additions to the amounts derived from war profits and personal incomes. Should these additions swell the tax returns to \$8,000,000,000, there would still be left twice this amount to be raised by the sale of bonds.

Enormous as this sum appears on paper, it still barely scratches the surface of our national resources, which, as Thomas W. Lamont recently pointed out, were estimated at the beginning of the war at \$250,000,000,000. The total amount derived from the sale of Government securities to date is \$9,978,785,800.

Without making any rash promises for the future or attempting to paint the chances of the Allies in too rosy colors, there is a possibility that this may be a "Victory Loan." Nearly 1,500,000 United States soldiers are now in France. More are landing every day. The way the "Yanks" beat back the Germans during the July drive and their earlier victories at Cantigny and Belleau Woods, together with the successes of the French and British, are sure signs, military experts say, that the fortunes of war have probably swung our way.

The industrial workers of the country will play a more important part than ever before in raising the new loan. They have profited largely through the war. In many cases, increased wages have far outstripped the advanced cost of living so that the so-called "working man" is actually in better circumstances now than he was before the world conflict. He will be called upon to meet his obligation to the Government in full.

Concerted efforts will be made all over the nation to canvass every industry. This is specially true in the Second Federal Reserve District, where a

remarkable organization has been built up to secure subscriptions in New York City. This organization is known as the "Rainbow Division." It is composed of trade committees representing every industry in the metropolis. The division accounted for \$409,367,150—more than one-third of the city's quota—in the Second Loan. In the Third Loan, this sum was bettered by \$155,399,950. Still further progress is expected during the coming campaign, because of the finely perfected organization of the Advisory Trades Committee—the executive or directing committee of the Rainbow Division.

The Advisory Trades Committee is headed by G. deB. Greene, of the firm of E. H. Rollins & Sons, of 42 Exchange Place. Mr. Greene, chairman, and Craig Colgate, vice-chairman, have obtained a record and rating of every business house in the city. There will be in the neighborhood of 100 subcommittees, each representing a trade, canvassing for subscriptions. When these committees begin work late in September, each will be supplied with a list of names of every firm to be visited. One advantage of this listing is that it will prevent the work of committees from overlapping. Another is that it will make easier their work and insure that the full period of the campaign is devoted to actual canvassing rather than organizing. This trade list will give the number of employees in every industrial house in New York City.

The personnel of all the committees is not yet complete. Each will have a chairman, appointed by Governor Benjamin Strong, of the Federal Reserve Bank of New York. The chairman will meet, then select his own co-workers.

Should the Government call for \$6,000,000,000, every committee will have to double its quota allotment of the Third Loan. At the beginning of the Third Loan, all the committees were divided into three groups or classes: those expected to raise \$10,000,000 or over, those expected to raise from \$2,000,000 to \$10,000,000 and those expected to raise under \$2,000,000. This plan was a great success, and caused

considerable friendly rivalry among the various committee teams.

Rivalry was further stimulated by the awarding of Honor Flags to firms, 60 per cent of whose members and employees had bought bonds. Five thousand of these flags were awarded. More than 1,500 of the firms earned 100 per cent Honor Flag—that is, every worker in the concern subscribed to the loan. The Honor Flag system will undoubtedly be a part of the coming drive.

Seventy committees reached and passed their total for the Second Loan during the last drive. Of these, the one that made the greatest increase was the electrical committee, headed by Theodore Beran. This committee was awarded an industrial Bull's-eye Honor Flag containing twenty-one stars—each star indicating an increase of 50 per cent over the total of the preceding loan.

Ever since the war started, great emphasis has been laid upon the efficiency of Mars as an educator. The gap between the war god and the Golden Rule would seem to be a wide one, but it is not. Since Mars has been in the ascendancy from the year of Dis-Grace 1914, he has taught us many things, and the application of the Golden Rule has been one of them.

After the war the dye industry of this country expects help from the Government—and this it is certain to get. Just now the Government itself is in need of help. Begin NOW to work for the oversubscription of the Fourth Liberty Loan in your industry.

ANILINE DYES & CHEMICALS, INC., TAKES OVER FORMER GEISENHEIMER INTERESTS

Announcement has been made of the dissolution of the firm of Geisenheimer & Co., owing to the retirement of Mr. Theodore Geisenheimer from business. The property and assets formerly belonging to the firm have been acquired by Aniline Dyes & Chemicals, Inc., of which Alfred F. Lichenstein is president and treasurer. The first vice-president of the concern is W. H. Van Winckel, formerly sales manager for

the Dow Chemical Co., and the second vice-president is Robert Hilton, vice-president of the Ault & Wiborg Co., Cincinnati, Ohio. Henry A. Datter has been chosen secretary.

The new concern will continue the business of the old firm and will enlarge its selling staff for the continuation of the sole selling agency for the dyestuffs, intermediates and chemicals manufactured by the Ault & Wiborg Co. The principal offices of the new corporation will be at Cedar and Washington Streets, New York City, with branch offices at Boston, Philadelphia and Columbus, Ga.

According to a report from the "Agencia Americana," American makers of vegetable colors have succeeded in producing 500 out of the 700 shades produced by the German industry, and in order to develop the importation of natural tinctorial materials to the utmost, have ordered heavily from Brazilian producers, and have also asked the cooperation of the government in securing transport facilities.

DYESTUFFS

BY DR. LOUIS J. MATOS

PROBABLY one of the most comprehensive and authoritative exposures of the dyestuff industry and its progress in this country was vouchsafed members and guests of the Franklin Institute at one of the stated meetings of that organization by Dr. Louis Joseph Matos, whose paper, delivered on that occasion, has just made its appearance in the *Journal of the Institute* dated for August.

There are few men better fitted to discuss this subject than Dr. Matos. Probably the dean of chemical engineers in this country in point of years of actual service in that capacity, his achievements in connection with the dyestuff industry are too well known to need citation here. Realizing the value of this article to readers of this publication, both for general interest and for future reference, we herewith reproduce it, as it appeared in the pages of the *Journal of the Franklin Institute*, in four installments, of which the following is the first:

PART I.

Mr. Chairman, Ladies and Gentlemen: In addressing you this evening upon the subject of dyestuffs, I am not unmindful of the wide extent of the subject and also of the very great amount of information and data, both general and technically special, that has been given to the public from various sources since August, 1914.

During this intervening period, and particularly during its first twelve months, when there was manifested so much concern regarding the probable supplies of coal-tar colors for our several dye-consuming industries, the wildest rumors regarding the possibility of

dye production in this country were current, and there was hardly a day but some new and far-reaching discovery was announced in the columns of the daily papers that would unlock the tightly-closed secrets of the German dye makers, and unlimited quantities of much-desired anilines would flow forth.

We know now that much of this publicity was the result of a total misconception of what dye production is, and the very great majority of those who were to relieve the serious dye situation are now at labor in other fields.

The dye industry, like many other fields of activity, has been developed by gradual stages through the years, and from the most modest beginnings. It has grown and increased in importance from the time when the artistic ideas of people were in a very crude state.

From the very earliest times of which we have record there is evidence that certain coloring matters of organic origin were in use, the two most important being indigo and madder, and it is interesting to note that these two items have come down to us continuously to the present.

It is not necessary to burden you with a list of those coloring matters quoted in the Scriptures, but it may be interesting to record the fact that in Europe, prior to 1,600, the art of dyeing, even at that time, had attained considerable importance on account of the skill of the dyers. There were currently employed at that period:

Indigo, madder, litmus, Brazil wood, lac dyes, kermes, buckthorn berries.

These several dyewares, or the coloring matter extracted from them, were mostly used for dyeing woolen fabrics and linen.

During the long years between 1600 and 1860, there were gradual additions to this old list of natural colors, which then included besides indigo, madder, and the astringents—sumac and gall-nuts—peachwood, camwood, barwood, sanders wood (tropical woods); cochineal (Guatemala), fustic (Cuba), weld quercitron bark (Pennsylvania), cutch and turmeric (Burma and Mexico). With this line of dyewares, the dyer

was in a position to meet most of the demands made upon him for dyeing not only wool, but cotton and silk as well.

In certain localities, notably in parts of France, some coloring matters obtained from plants indigenous to the region in which the dyer worked, were used. Among these dyewares may be included safflowers and saffron, the former much employed for a most beautiful shade of pink, and the latter for a shade of yellow.

As the fame of the dyer's products and skill spread, the interest of dyers in other localities became excited, and the desire to produce similar results was aroused. In consequence, the secrets of the dyer, handed down from father to son, were jealously guarded, so that competition might not be able to duplicate their work. We have evidence of this condition when we examine the recipes extant in old formula books of dyers of past generations, notably in the production of the so-called "spirits," those mysterious compositions of tin and certain acids, which were designated largely by misleading names.

The dyer of the period prior to the introduction of the coal-tar dyes was indeed a real master craftsman. While he may not have had the refined surroundings of the dyer of the present, nor the highly developed scientific aids that are now so common, he produced results that are to be regarded as marvelous. When we read old notes and recipes, and bring to our mind the uncertain composition of the various "infusions" that the dyer employed, we are compelled to acknowledge that the workman of the period was one who really knew his trade.

The "infusions" or "liquors" made use of at that time were largely weak liquid extracts made by boiling the crude natural dyewares with water, then straining and using the stock solution as the dyer's demands required. At other times, such as for logwood, a given amount of the ground wood was simply boiled out, and the total amount of infusion so obtained was employed for one batch of material to be dyed. This crude method of operating was the

origin of the now highly-developed logwood industry which flourishes both in this country and in Europe, especially in France, from which country the very finest logwood extracts have come.

There were other natural dyewares analogous to logwood, which occupied a prominent position in the catalogue of active coloring matters, and which include peachwood, barwood, sanders wood, and other similar woods, the majority of which are natives of the tropics. They were chiefly used for producing red, brown and many compound shades upon wood in combination with logwood. These woods were imported and ground, and the ground or rasped wood was sold to the dyer, who made the infusions as his requirements called for. Some of these now scarce and curious dyewares were used in Philadelphia even as late as 1895, where they were employed for producing shades upon heavy carriage robes and in dyeing seal plushes. From that

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AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated

A. P. HOWES, Editor and Publisher

We have repeatedly expressed the opinion in these columns that American dyestuff manufacturers ought to take active measures to insure a more intelligent attitude on the part of consumers of American-made colors.

This is a tremendously large subject, and one in which everybody in the trade is, at least theoretically, vitally concerned. Every dyestuff manufacturer with whom we have talked agrees at once that a great amount of educational work is necessary, but when it comes to a question of ways and means or of his individual participation in such work, we note a disposition on the manufacturer's part to "let George do it."

As a matter of fact the manufacturers are so vitally concerned with their technical manufacturing problems which have to do with the actual production of colors that they have very little surplus time or energy to give to such general subjects as educational publicity.

An effort to educate all the women of the country as to the relative merits of American-made dyestuffs—what colors are really reliable, what are unsafe and what progress is being made toward the solution of remaining difficulties—would be a task so large as to seem almost impossible of successful accomplishment at the moment. There is, however, one class of people whose intelligent interest concerns the welfare of the dyestuff industry more than that of any other, and which in itself is not so extremely large. This class comprises the executives and salespeople in retail establishments who sell dyed fabrics and garments to the consumer. These people, as a whole, are reasonably intelligent, and would prefer to give sat-

isfactory answers to customers inquiring about colors than to be compelled to take refuge behind the oft-repeated assertion that "we cannot guarantee American colors." We believe that the stores would lend the heartiest sort of co-operation to any movement designed to increase the intelligence of their employees in this direction, but it remains for the dyestuff manufacturers to institute some such campaign.

The National Aniline & Chemical Co., Inc., has been doing very excellent work in this direction through the showing of its exhibit at various department stores, but this, of course, is only a start in the right direction. The REPORTER does not profess to know of any royal road which will lead in a brief space of time to a complete enlightenment of all retail salespeople, but it does believe that consistent work in this direction would accomplish very satisfactory results. Just what lines efforts of this sort should follow would have to be worked out carefully by a committee of dyestuff manufacturers. But that something could be accomplished if the matter were taken up seriously, we believe to be certain.

It would seem to us that the intelligent use of certain of our reputable dry goods trade papers, not alone by using their advertising pages but by enlisting their co-operation in the form of some sort of active campaign among the salespeople, might produce very desirable results.

Some may think it a foolish policy for a dyestuff trade paper to recommend the expenditure of money in channels other than dyestuff trade papers, but we are sufficiently broad-minded to believe that our own success is bound up with the success of the industry, and that we cannot expect to receive any considerable percentage of the dyestuff manufacturers' advertising appropriations unless the condition of the industry as a whole justifies this expenditure.

The REPORTER would be glad to co-operate to the extent of its ability in any movement looking to the accomplishment of the purpose outlined above.

DYESTUFFS

(Continued from page 9)

time until the outbreak of the war, the decline in the use of those products was rapid and complete. When the war curtailed many of the artificial colors, the dyers had to fall back upon these antiquated coloring matters, and after a time some were imported and sold at unheard-of prices on account of the great demand and scarcity of stock. Afterwards, when domestic producers of artificial colors began to make deliveries, the market for the older dyewares fell off again. It is curious to note, however, that during the "dyestuff famine," when these antiquated coloring matters were brought to light, very few dyers knew anything about their application, and, as a consequence, the dyed material that was delivered from mills did not measure up to the usual current standards for fastness, and therefore dyes were condemned off-hand, when, as a matter of fact, the fault was not with the dyestuff, but with the inexperience of the dyer, due to his unfamiliarity with the dyestuff he was using.

There are to-day many experienced cloth dyers who are expert in the application of logwood—for be it remembered that logwood has always been a standard dyeware for black on wool, and against which artificial blacks for the same purpose are judged—and these same dyers are absolute failure when it comes to using other colors. The same remark applies with greater force to the dyeing of silk. There are no dyestuffs of coal-tar origin that can duplicate the well made logwood blacks on this fiber. Black dyeing in the silk industry is a trade by itself, and deservedly so.

Indigo has been handed down to us from the earliest times as the one blue color that has been regarded as having a degree of fastness far in excess of any product yielding the same shade. It is a native of certain portions of the tropics of both hemispheres, but the greatest amount of natural indigo has by far been produced in British India.

Indigo, as it appears in commerce, is the blue coloring matter obtained by

oxidizing the juices of the indigo plant. The plant at maturity is cut and carted to the indigo factory, where it is placed in huge vats, water run on, and the whole allowed to ferment. At the proper stage of fermentation, the liquors containing the indigo in a chemically reduced state (indigo white) are run off and agitated, either by being whipped by hand or by revolving light paddle wheels. This agitation causes atmospheric oxidation of the indigo white, which is soluble, to indigo blue, which is insoluble and precipitates. This precipitation is then filtered and the cake pressed, then cut to proper size and branded while still moist, and finally dried. It is then ready for the market.

Indigo as a source of blue color for textiles has had an unbroken period of use for centuries. It is employed in dyeing both wool and cotton; the former by means of both so-called "vats" and as "extract," the latter always in the vat. Vat dyeing means that the indigo is reduced to the state of indigo white and then subsequently oxidized to indigo blue on the fiber. "Extract blue" is dyed by means of a solution of indigo in sulphuric acid, formerly called "chemic," and in later years more carefully prepared by purifying the sulphuric acid solution of the indigo. A highly refined dry indigo extract is sold as indigotine, but it is in reality only a disulphonic acid of indigotine—the real blue color of indigo in soluble form.

Madder is another of the natural dyewares that has been in use for centuries, being employed most commonly for the production of reds—the red which we are most familiar with being termed turkey red. Formerly, and up to the recovery in 1868 of artificial alizarine by Graebe & Lieberman, its cultivation and preparation for market was a most important and flourishing industry. When artificial alizarine became a commercial reality, the madder industry rapidly declined to very small proportions, and as a dyeware it is no longer to be considered.

The several coloring matters to which I have directed your attention, occupying positions of first importance in the

dyer's art, are mentioned for the purpose of preparing the way to the serious consideration of the dyes of artificial origin, and by which the great majority of the older dyes were completely displaced.

The first dyestuff of artificial origin is the well-known Perkins' violet, and its discovery in 1856 paved the way for rapid strides in organic chemical research that has continued from that date to the present time, and the number of patents granted by various industrial countries attest the activity of chemists in the direction of dye production, although not every patent granted represents a dye that has attained commercial interest.

The more important artificial discoveries may be briefly summarized as follows:

| | |
|--|------|
| Perkins' violet or mauvein (epoch) | 1856 |
| Fuchsine or magenta (Hofmann) | 1858 |
| Aniline black (Lightfoot) epoch) | 1862 |
| Nicholson's blue | 1862 |
| Methyl violets (Poirrier)..... | 1866 |
| Safranine | 1868 |
| Artificial alizarine (Graebe and Lieberman) | 1868 |
| and its manufacture in..... | 1869 |
| Indigo blue from isatin..... | 1870 |
| Eosine | 1874 |
| Cachou de laval (first sulphur color) | 1873 |
| Triphenylmethane dyes | 1876 |
| Methylene blue | 1877 |
| Fast red | 1877 |
| Azo scarlets | 1878 |
| Propiolic acid for indigo..... | 1880 |
| Congo red (first direct or substantive color)..... | 1884 |
| Tartrazine (first fast acid yellow for wool)..... | 1885 |
| Primuline and the "ingrain" colors | 1887 |
| Carbazol yellow | 1888 |
| Diamine fast red F..... | 1889 |
| The thioflavines | 1889 |
| Indigo from phenylglycocol (Herman) | 1890 |
| Cyanine | 1891 |
| The rhodamines | 1893 |
| Vidal black (first sulphur black). | 1895 |
| Synthetic indigo, vat colors, etc. | |

This list could be greatly augmented, but it is sufficient to indicate the grad-

ual extent of industrial and chemical research that has developed the great number of dyes that find use in some or all of the industries employing coloring matters.

The particular branch of dye research that includes the so-called azo colors, deriving its impetus by the discovery of Peter Greiss in 1862, has been most productive of results, and for the time engrossed the attention of the great majority of dye chemists, with the result that there were innumerable products given to dyers that traced their origin to the Greiss reactions. This particular group of dyes—azo dyes—is chemically subdivided into thirteen divisions, and there has been made necessary a vast

amount of chemical research covering in their extension and development the production of those raw materials that are necessary for each particular dye. This phase of dye chemistry has been to a very great extent neglected in this country, but during the past three years it has been receiving a degree of attention never before attempted in private laboratories, works' laboratories and in colleges.

In the operation of dye making, certain raw materials are necessary. These raw materials are obtained in the first instance from certain distillation products obtained from coal tar; the most important for the purpose of illustration are benzol and naphthalene.

From benzol there are obtained a succession of secondary products, each the result of a definite reaction and each possessing certain properties.

From naphthalene there are also obtained by various reactions a number of products aggregating at least one hundred and seventy-five, and each of which possesses properties that make it useful for certain further reactions. If we study the chemistry of several of these benzol or naphthalene derivatives, we will at once be impressed with the immense amount of painstaking research work that must have been done in order to ascertain the properties of each product, and the possibility of combining each of them with other dissimilar bodies, for the purpose of obtaining a dye or coloring matter different from any other before produced. It is this constant investigation that has been at the bottom of the seemingly endless array of known dyes.

If the dye chemist has only to give his attention to combining various raw materials, his work is extremely simple, but where he has to work out the pro-

duction of new raw materials, then his work becomes extremely complicated.

In studying the chemistry of the commercially useful derivatives of naphthalene, mostly sulphonic acids, we are at once impressed with the limited sphere of labor undertaken by the investigators, and a digest of the patents will show that the labors of these investigators have been quite active within these limits. Each investigator has concentrated upon some one, or possibly two, groups of colors, and their necessary raw materials, leaving to others similar work along diverging lines.

The group of azo dyes includes the greater number of dyestuffs that are available for cotton and wool, and for a long time after the classic discovery of Peter Greiss occupied the attention of many chemists, with the result that a very extensive range of colors was produced with which the dyer was enabled to obtain shades of almost every conceivable hue.

One of the most important discoveries was the production of the so-called azo scarlets, which, in a short time, entirely displaced cochineal. These original scarlets were later considerably improved upon, and brilliant shades were made possible possessing extreme fastness to light. Several of these scarlets are much employed in other industries, notably for the staining of paper.

The ultimate production of wool blacks marked the beginning of a revolution in dyeing certain textiles, which were formerly dependent upon logwood, and in time the gradual decline of this dyeware became quite noticeable.

It is unnecessary for me to dwell upon the technical details for the production of these various products, since the outlines of the most important may be found in many treatises and in the patent literature.

(To be continued)

Dealers and manufacturers handling direct black continue to experience difficulty in meeting local and foreign inquiries for this coal-tar dye, owing to the steady demand. Practically the entire present output is booked ahead.

THE FASTNESS OF DYESTUFFS TO LIGHT AND ULTRA- VIOLET EXPOSURE

By *Edw. W. Pierce, Chief Chemist
U. S. Cond. & Test. Co.*

The following article, which appeared recently in the *Color Trade Journal*, should be of great interest to readers of the REPORTER:

Of all the tests applied to dyed fabrics, the most empiric and inaccurate is the exposure to light. There are several elements which enter into the gradual destruction of the coloring matter without our being able to either control or measure any one of them. The original method, still extensively practiced, is to nail a sample to a board, covering a portion, and allow sun and weather to exert their influences during a stated period. At the end of the period the dust is beaten out and a decision reached as to whether the resistance has been good, fair or bad. Some observers take the precaution to expose at the same time a well-known standard, but the majority usually make a single exposure of the sample in question. Where it is too troublesome to go on the roof, we often find samples exposed behind the glass of a window with a southern exposure. The various departments of the United States Government not only sanction but require such tests for a period of thirty days, and are likely to reject any goods that do not resist as well as the standard sample.

The criticism of the exposure test is based on the following facts: The period of time has no constant relation to the actual amount of solar radia-

tion received by the sample. This is on account of the variations in the weather and the variation in the intensity and duration of sunlight from month to month. The sample is also subjected to varying amounts of moisture, which in conjunction with the sunlight produce a bleaching rather than a fading effect. Lastly, the apparent fading is measured mostly by personal opinion. A change of color being counted more than a real loss of color.

Samples composed of heavily dyed fibers mixed with white fibers show less change of color than lighter, even tones which match the same general effect. Further, there is no point where we may decide that fading has begun. Fading is so gradual that the determination of it depends on individual ability to recognize it.

It is hardly fair to any dye to make tests of its fastness to light on an arbitrary percentage of dye on a sample. It is self-evident that pale shades will resist less than full shades, but it becomes difficult indeed to decide how heavy a dyeing of one color should be compared with another in order to have a fair comparison. As an illustration, we may compare dyeings of 1 per cent each of naphthol yellow S with tartrazine and decide that the latter is the much faster dyestuff. If we dye 1 per cent of naphthol yellow S, which being over-dyed seems redder and flatter, then the naphthol yellow will resist light longer than the tartrazine. This particular feature can be overcome in the comparison of two dyes of different shades and

strengths by using both in separate combinations for matching the same shade. We may make a brown or a neutral tone from three colors, using in each case the one to be tested and having the two other colors the same in both cases. Then an exposure of both under the same conditions will give a better idea of their relative fastness.

On account of the uncertainties cited above it has been found necessary to make the test more accurate by the use of a more uniform source of light. Mills bidding on army contracts could not always wait thirty days for the result of an exposure test, and if the time was during the winter, or the weather had been bad, were not sure of later developments.

In finding a substitute for sunlight we are at once confronted with the fact that the exposure test is not only a molecular disruption, due to the ultra-violet rays in the sunlight, but is in part due to some of the short visible rays that pass through glass, and is combined with a bleaching or oxidation due

to the action of the rays on the fibers in the presence of moisture. All are familiar with the bleaching of linen spread in a damp condition on the grass in the sun, and it is also a fact that dry linen in the sun will not bleach, but turns yellow.

It is quite possible for a dye to be resistant to ultra-violet rays and yet be easily bleached, and the reverse is also true.

The first step was to obtain a source of rays which would be fairly constant and yet be powerful. In due time a type of lamp was found which was being used for water sterilization.

The makers adapted a stand and hood to protect the eyes, and a number of dyed samples were tested to ascertain the value of the method.

Early in the experiments it was believed that some simple system of measurement could be devised, such as the decomposition of a liquid in a quartz tube and the measurement of a liberated gas, but no method of this kind has so far proven a success. Photographic methods were also discarded because practically all photo-chemical reactions are produced as well by the short visible rays that pass through glass. The Bureau of Standards recommends the photo-electric cell, but we have no information as to how the visible rays are separated.

Practical trials in comparison with dry exposures to strong sunlight gave an approximate value of 1 to 8. This is, one hour under the quartz mercury vapor tube at a distance of 18 inches equaled eight hours in the strong sun, or an average day. This is as close to a comparison as may be hoped for, because the quality and power of sunlight is so uncertain in character. It is realized that sunlight in passing through the atmosphere has lost many of its shorter rays and that the radiation from the quartz tube differs from it in many respects, yet, in the main, the results are similar if we exclude the action of moisture.

When the mercury vapor quartz lamp is started and the resistance is still high and the voltage low, particularly when

the air is humid, there is an abundant production of ozone. No ozone is perceptible, however, when the resistance had dropped to 3.5 and the voltage risen to 170. We may safely disregard the formation of ozone as a factor in the fading, although it has been demonstrated that it dissolves in water with the formation of peroxides.

The reactions on the fiber are varied and complicated. Yellows on wool, containing nitro groups, first turn dark and show evidence of reduction. As wool contains sulphur, and as the exposure of undyed wool causes a yellowing and a development of a basic substance, this can be explained. A true fading follows the darkening of such dyes. Other dyes not containing nitro groups fade regularly. Certain of the vat colors, notable for their resistance to weather and oxidation, fade readily. These facts seem to indicate that the general effect is that of an alkaline reduction, especially since acid oxidizing agents often restore the color.

Exposures were made in the wet condition and the results differed greatly from the dry tests. It has been shown that water yields peroxide, and also that peroxide is decomposed by ultra-violet radiation, but we can draw no conclusions from mass reactions when we are dealing with such subtleties as colloid dyes adsorbed by colloid fibers. It is probable, however, that an ultra-violet exposure of a damp sample would be a closer approximation of actual weather exposure, but in this case we would exaggerate the bleaching action.

At present the test simply consists in exposing part of the sample, at a distance of 18 inches in comparison with a standard sample, and disregarding the absence of moisture. The results are obtained quickly and, although there are a few dyes that seem irregular, the results are in general quite dependable. The irregularities may generally be corrected by acids or oxidizing agents. This is a safe test in every case before making a final comparison.

Mixed fabrics, like the army olive drab, show a yellowing of the white wool in the mixture, but a little weak

acetic acid restores its whiteness and leaves only the faded effect. There is plenty of opportunity for further technical investigation along these lines, and the specification of standard conditions by some authoritative body is much needed.

That the interest of the English lay public in dyestuffs is becoming keener than ever is shown by the fact that for the first time these commodities will be the leading feature of the British Industries Fair, to be held in Glasgow from August 19 to 31. British Dyes Ltd. and the Turkey Red Company have been exhibitors in the past at this fair, but this year a number of other concerns have signified their intention of displaying their wares.

Following the seizure of Carl Feldman, president and general manager of the Berlin Aniline Works, Philadelphia, as a dangerous enemy alien, the stock of the company, together with all correspondence and records, was taken over by Custodian of Alien Property Palmer. Feldman is being held at a Massachusetts detention camp pending an examination.

THE BIOLOGICAL SIGNIFICANCE OF PLANT PIGMENTS

Some very interesting results have been reached by J. Dufrenoy in investigating the source and function of the coloring matter of plants from a biological point of view. The general conclusions founded upon this work are that "The resinous secretion formed by certain plants is a mode of defense against auto-intoxication and senility. Secondly it contributes to prevent, localize or cicatrize parasitic infections. More generally stated, *pigmentation is a defense reaction against an excess of radiation*, the plant living in the shade of its chlorophyll as the negro lives in the shade of his skin."

But these pigments, even chlorophyll, are not specific agents of biologic syntheses. Synthesis of hydrocarbon compounds is effected without their aid and it seems legitimate to assume the possibility of direct construction solely by photo-synthetic power of light, of the most complex components upon which the physical life of plants is based.—(*Rev. gen. des. Sci.* 1917, 28, 575.)

THE ABSORPTION SPECTRA OF SOME POLYHYDROXY-ANTHRAQUINONE DYES IN CONCENTRATED SULPHURIC ACID SOLUTION AND IN THE STATE OF VAPOR

That the value of the study of absorption phenomena is being more generally recognized is shown by the increasing number of articles on this subject appearing in current journals. David B. Meek has recently published an exhaustive series of tests on some hydroxy-anthraquinone dyes using the Nutting photometer and a large Hilger wave-length spectrometer. Absorption spectra of the dyes in solution were compared with those of the same colors in the state of vapor, vaporization be-

ing effected in a brass tube, supported in an electrical resistance furnace.

The bands of substances as vapors are sharper, narrower and more distinct. Alizarin, quinizarin, purpurin, anthragallol, alizarin cyanine, alizarin bordeaux, anthracene blue WR were tested as vapor, in alcoholic solution, sulphuric acid solution, aqueous potash solution and on cloth mordanted with tin, alum and chromium, the maxima of absorption bands being defined.

Alizarin cyanine in various organic solvents such as ether, amyl alcohol, chloroform, acetone, methyl alcohol, glacial acetic acid, pyridine, amyl ether, anisol, phenol, nitrobenzene is reported in wave-lengths and frequencies of maxima of absorption, the refractive index of the solvent, and the effect of piperidine as a solvent at different periods of time, being included.—(*Jour. Chem. Soc.*, 1917, 112, 969.)

COLOR REACTION OF AROMATIC ALDEHYDES

A number of reactions have been recommended for detecting aromatic aldehydes, among these being the fuchsin-sulfurous acid test, Fischer and Penzoldt's diazobenzene-sulphonic acid reaction, Riegler's test with phenylhydrazin oxalate and caustic potash, and others. Based on an observation by Häussler that when sulfanilic acid is mixed with vanillin, an orange color is produced (*Journ. Suisse Pharm.*, through *Pharm. Weekly.*), Pooth has worked out the following reaction for detecting aromatic aldehydes. Three to four milligrams of a ten per cent. solution of sodium sulfanilate, or sodium naphthionate, are warmed on a water-bath and mixed with the alcoholic solution of the aldehyde.

In some cases the colored product of reaction crystallizes out at once. To one portion of the liquid a few drops of dilute sulfuric acid are added, by which a change of color takes place with some aldehydes; another portion is evaporated whereby the color generally becomes darker.—(Abstract in *The Druggist's Circular*, 1917, No. 12,640.)



AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

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"Circulated Everywhere Dyestuffs are Used"

Vol. 3

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No. 9

KNOW YOUR ENEMY!

Arrest of Bayer Company Officials and Exposé of
Their Methods Should Put Dye Men on Their Guard

TOO much importance cannot be attached to the recent arrest of five officials of the Bayer Company, charged with conspiracy to engineer a generous slice of the future profits of the concern into German hands, while at the same time retaining a strong footing in the chemical industry in this country for the probable purpose of enabling Germany to re-establish her dye and drug interests in the United States after the war; nor to the practically contemporaneous indictment of Frederick C. Atteaux, a well-known Boston importer, likewise charged with conspiracy to defraud the Government by undervaluations of chemicals and dyestuffs shipped into this country.

These cases form two of the most recent examples of a condition which has existed in the past, and which, please note, undoubtedly still exists in a number of instances as yet undetected. And what is more, it is distinctly up to the American dye manufacturer, dealer, dyer, mill man, and, in fact, every individual, no matter how remotely connected with the industry, to watch out for this sort of treachery with both eyes during every waking moment, and to expose

it promptly, once found, regardless of what inconvenience or even personal sacrifice it may cost him. The opportunities are still many.

There is no doubt but that there are still some to whom the German agent and his activities in this country is a myth and a joke and a comic-paper figment of the imagination. It is really high time that the last of these unconscious and fatuous aids to Hunnish designs was rudely jolted into a realization that it is not the Germans in the trenches whom we have to fear, but the Germans and German sympathizers in this country who, masking their activities behind a bland smile and an array of Liberty Bonds, proceed to undermine our institutions and morale at every favorable opportunity. Apparently no methods are too debased for them to employ, no slime of treachery too foul for them to wallow in. The more honest and straightforward the citizen of this country is, the harder it is for him to understand and guard against just such occurrences as those herein recorded. Is it not better, then, to err on the side of being oversuspicious?

The arrest and exposure of the

Bayer Company officials is greatly to be rejoiced at, as are the initial steps already taken in the Atteaux case. And it is the earnest hope of this publication that, should their guilt be firmly established, they will be dealt with to the full limit of the law. Their offense lies not in being Germans or in sympathy with Germany, but in posing as loyal Americans, drawing all manner of sustenance and comforts from this country, and then secretly playing the part of traitors to the land which they outwardly professed to love. Benedict Arnold barely escaped with his life after trying something not so very different, while Major Andre learned too late the true grimness of assisting others in the consummation of this most heinous of all crimes.

We believe it to be the duty of those who have not already awakened to a full realization of what contemptible methods can be employed almost beneath our very noses for months without being detected to acquaint themselves with the more important details of these cases given herewith, and then to read the statement from Alien Property Custodian A. Mitchell Palmer to the public, showing clearly how they can aid in rounding up additional offenders and properties at present unlawfully held.

The charge against Atteaux is specifically that he conspired with Ed Dahl, of Bremen, Germany, to falsify Custom House declarations on chemicals and dyestuffs shipped here. The Government alleges that beginning in December, 1915, Atteaux and Dahl, the latter a member of a wholesale firm in Bremen, shipped goods to Boston and gave a Custom House valuation at half the actual cost. The amount alleged to have been obtained

fraudulently was \$10,000, Federal officials declare. The case will come up before the next district court.

The Bayer Company, revelations, however, throw into bold relief a gigantic scheme for rendering wholesale aid and comfort to the enemy and to make easy the aims of the German color and drug combine in this country after the war. Once the symbol—as we were told—of purity and reliability, the trade-mark of the concern, the famous "Bayer Cross," has become instead an emblem of treachery and deceit in the minds of those who respect an honest foe.

The men under arrest are Herman C. A. Seeböhm, director and secretary of the Bayer Company; Dr. R. J. Pabst, manager of the New York and Southern sales department; A. Reiser, office manager of the Williams & Crowell Color Company, Inc., of Providence, R. I.; Dr. Albert Segin, chief of the pharmaceutical department of the Bayer Company, and Dr. R. Hutz, a former director of the Bayer Company, who was taken into custody in New Hampshire.

According to the *New York Times*, the Bayer Company, which has one of the largest drug and chemical plants in this country, at Rensselaer, N. Y., had been earning money at the rate of \$1,500,000 a year before it was taken over by the Alien Property Custodian. Its principal owners were in Germany, the chief of them being Herr Duisberg, general director of the Bayer Company in Germany and the head of the German War Trade Board.

After the company had been taken over by the Government it was found that it was bound by a peculiar contract to transact business with a concern in Providence, R. I., in such a way that the Providence company would profit enormously. Had Custodian Palmer accepted the contract as bona fide and followed its terms, the Bayer Company would have purchased the output of the Providence concern at prices which would have given the Providence company a profit of \$600,000 a year.

This profit, until the scheme was detected, was going into the hands of the Germans who had formerly controlled the Bayer Company, and they were using it to buy land on the New Jersey waterfront and to make other arrangements to rehabilitate the German chemical industry in this country under the guise of American ownership. Several American citizens, including a prominent lawyer, whose case is in the hands of the Department of Justice, are said by Mr. Palmer to have co-operated in the scheme to retain a bridgehead for an attack of German commercial interests on the chemical industry in this country after the war.

The corporation at Providence which, according to Government officials, was being used to pump profits from the Bayer Company, while under Government control, is the Williams & Crowell Color Company, Inc. Just before the Bayer concern was taken over, its officials, anticipating Government action, it is alleged, secretly obtained control of the Providence company, a comparatively small concern, which they purchased for \$100,000.

The contract, which, it is charged, was intended to pour huge unearned profits into the treasury of the small concern, bound the Bayer Company to purchase its entire output of sulphuric acid dyes, which are being used to dye cloth for uniforms of American soldiers.

After the purchase of the Providence concern, a new company was organized in this city, using the same name except that "Inc." was added. A dummy directorate of American citizens, according to the charges, was formed, and they were curbed from possible participation in the excess profits by a section of the by-laws limiting dividends to 10 per cent on the capital of \$100,000. Consequently, the concern, which has been earning \$50,000 a month and might soon have been earning more, could not pay out more than \$10,000 a year to stockholders.

Suspicion, according to Govern-

ment officials, was originally directed at the Bayer Company because the directors last January voluntarily asked Mr. Palmer to take over the property because of its alien ownership. The officials of the company seemed to be overzealous in their desire to co-operate with the Government, it was stated, and this gave the impression that they were anxious to have the transfer effected without it being preceded by a searching inspection of the books and affairs of the concern.

It was announced that waterfront property which the Bayer officials and the disguised subsidiary had obtained at Edgewater, N. J., on an option was valuable for war purposes, and would be taken over by the Government.

In order to disguise the ownership of this property still further, they used a legal device that has been encountered by the Alien Property Custodian in virtually every case of a German-owned concern which has

sought to escape sequestration under the trading with the enemy act. This is what is called a "carry-in-the-hat" corporation, which means articles of incorporation framed to facilitate the transactions of a parent company which cannot safely appear to be connected with some of its transactions.

These are the principal facts of the case as they appeared in the press. To all who are interested Mr. Palmer has sent, through the New York Business Publishers' Association, to readers of the trade press, the following statement regarding such cases in this country:

There are two ways of making war against an enemy. One, by force of arms; the other, by force of economic pressure.

When a nation wages economic war it brings to bear upon the enemy every force it can muster to stop his supply of food, money and munitions, and thereby make him weak and impoverished.

The day the United States entered the war there was in this country millions upon millions of dollars belonging to Germans. It was invested in mines, factories, banks, steamships, farms, plantations, etc. Its total amount might run into billions. We had no way of estimating then. But we did know that it was German gold that was colonizing industries here in America, and that it was good American money that was being shipped back to Berlin in the form of earnings to enrich the German nation, to fill the war chests, to help complete its great plan for a world control of commerce and industry.

When war was declared the army and navy started to mobilize men and guns, the Shipping Board to build

the fleet, the War Trade Board to cut all commercial relations with the enemy, and the Alien Property Custodian to gather into the Treasury of the United States every penny of German-owned money that could be found. That is why the office of the Alien Property Custodian was created.

The duties of the Alien Property Custodian are exactly what the name implies; only, in addition to the work of taking over and administering holdings of enemies, he has been given power by Congress to sell outright these properties belonging to the great industrial and corporation classes of Germany planted here in America.

In order to help, it is important to know just *who* is an "enemy" and *what* is "enemy" property.

Enemy property includes any and every kind of property, money, chattels, securities, lands, indebtedness, accounts receivable, etc., which belongs to an enemy. Even if the property is held in the name of another—by a dummy or in trust—if the real beneficial interest belongs to an enemy it is enemy property.

An enemy under the act is:

1. Any person, regardless of citizenship or place of birth, who is within the boundaries of Germany, Austria-Hungary or their allies, or within the territory actually occupied by their military or naval forces. A peaceful and law-abiding German or Austrian citizen residing in the United States is not an enemy; but an American citizen living in enemy territory is an enemy.

2. A corporation, if incorporated within the territory of enemies or their allies, or incorporated in any neutral country and doing business within the territory of enemies or their allies.

3. An official or agent of an enemy government or any sub-division thereof.

4. All natives, citizens or subjects of Germany or Austria-Hungary interned by the War Department.

5. Citizens or subjects of Germany

or Austria-Hungary who are prisoners of war or who have been or shall be interned by any nation associated with the United States in the war.

Three-quarters of a billion dollars' worth of property have been reported to the Alien Property Custodian at Washington to-day, but from our investigation throughout the country we know that there is much more not yet located. Here is where the citizens can render valuable assistance.

You can help the nation by mailing the Bureau of Investigation, Alien Property Custodian, Washington, D. C., reports or information on enemy-owned property in your vicinity. You are shareholders in this great combination trust company, department store and auction sale, now run by the Government, and the larger you swell its holdings the more you will back up the army and navy now battling against the Hun.

THE ALLIED INDUSTRIES CORPORATION AND THE GRAND CENTRAL PALACE

Alfred I. du Pont gave out at the Hotel Belmont on Thursday afternoon of last week certain information with regard to the plans of the Allied Industries Corporation for making use of the Grand Central Palace as a great clearing house for the stimulation of international trade after the war. Mr. du Pont's plans are very comprehensive and, when put into operation, will undoubtedly prove of tremendous value in promoting closer trade relations between the United States and the allied nations. Their scope is so large that we have not the necessary space to go into them in detail in this issue, but will outline them fully in the near future.

The announcement of most immediate interest to the dyestuff trade had to do with the disposition of the Grand Central Palace building which, it appears, will be taken over by the Government for use as a tremendous base hospital for the duration of the war. The governmental occupation, however, will

not begin until October 1st, and will in no way interfere with the holding of the Fourth National Exposition of Chemical Industries scheduled for the week of September 23rd.

A man in Spain would like to secure an agency for the sale of powdered colors for dyeing all kinds of silk, wool and cotton textiles. Correspondence should be in Spanish, and further details may be had of the U. S. Bureau of Foreign and Domestic Commerce, or any of its branch offices, by mentioning File No. 27,311

Japanese manufacturers of dyestuffs are considering among themselves the advisability of asking the Imperial Japanese Government to grant them protection after the war against the rivalry of German and other foreign firms. A leading dye manufacturer of Tokio announces the safe arrival there recently of a large stock of dyes made in the United States.

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A. P. HOWES, Editor and Publisher

THE BAYER CO. INCIDENT

Our leading article this week is based on the exposé attending the arrest of several officials of the Bayer Company. The carefully camouflaged operations of these gentlemen serve to illustrate very nicely the sort of thing which we may expect from certain Teutonic elements in the dyestuff industry and against which we have printed repeated warnings in these columns. We cannot honestly say that we blame the Germans or hold methods of the sort exposed to be particularly reprehensible—certainly such tactics are mild in the extreme when compared with what we have become accustomed to expect from the Hun in his conduct of submarine warfare. But developments of this kind make it very clear that German commercial interests are no more to be trusted than is the Boche in the trench. Because he cries "Kamerad" is no reason why we may not expect a bayonet in the back.

CONCERNING THE SIXTY-SIXTH CONGRESS

The question of the personnel of the next, or Sixty-sixth, Congress is one which should be of particular interest to both manufacturers and consumers of dyestuffs. There is no doubt that there will come before this Congress numerous questions of more or less moment to the dyestuff industry, and it is extremely desirable that all factors in the industry take it upon themselves, in so far as is possible, to see that persons elected to Congress in their respective districts are of a caliber able intelligently to cope with the large problems

which will be submitted to them for consideration and holding views known to be favorable to the best interests of the industry as a whole. At the present time there are numerous Congressional districts which are far from being represented by the men best equipped in point of vision, broad general experience, judgment, ability, courage and loyalty to fill these positions.

Those of our readers who will take it upon themselves to display a little active interest in this matter can undoubtedly accomplish a great deal toward securing the nomination by the two leading political parties of the very best men available in each Congressional district. This is a time when every citizen ought to take an active interest in the politics of the country, and we respectfully suggest that each and every one of our readers ought immediately to get in touch with political leaders, newspaper editors, etc., in his community and voice the vital necessity of securing the nomination and election of men who are thoroughly competent to serve the nation in this time of crisis. Those who are residents of States in which the primaries have already been held should scrutinize carefully the various candidates who have been nominated and determine which of them in their opinion is the man who can most adequately deal with the problems which will come before the next Congress.

This is a question which, although of unusual moment to the dyestuff industry, is one which affects all phases of our national life to little less extent, and which, because of its great importance, should command the interest and energies of all loyal citizens.

Of interest to dyers and dye manufacturers should be the information that a form of chemically treated cotton cloth, to be used, if successful, as a substitute for silk in the army, is now being tested out by the Ordnance Department.

DYESTUFFS

BY DR. LOUIS J. MATOS

We give herewith the second installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute*, and which, for the benefit of our readers, we are reproducing in four parts.

PART II

After the discovery of Congo red, in 1884, there was an immediate concentration of chemical endeavors upon the group of substantive dyes—dyes that colored cotton without a mordant—the result being a long line of products that at once gained recognition throughout the world. Some of these dyes are remarkable from the fact that they are capable of dyeing corresponding shades upon both cotton and wool, thereby opening the way for a valuable line of dyes, known as “union dyes,” with which both of these fibers may be dyed the same shade in the same bath. This is of great commercial importance, inasmuch as it permits the manufacture of cotton and wool mixed goods that were not theretofore possible, except with considerable trouble.

There are many wool dyes that partially stain cotton, and also many cotton dyes that only slightly stain wool. The dyer, therefore, has at his command the means, by a judicious admixture of these two classes of dyes, of producing a combination of dyes that will enable him to dye union goods with the greatest ease. Most of these combinations dye the cloth in a bath fortified only with a small amount of sulphate of soda.

One of the most important, far-reaching dye discoveries was that of an Englishman—Green—in 1887, who produced a series of dyes known as “in-grain colors,” and which at once gained

a strong foothold in cotton mills on account of the then remarkable fastness of the shades produced. The most important dye of the group is known as primuline, and occupies a prominent position to this day as a source of red for cotton. It was the first dye to serve as a substitute for alizarine on certain classes of goods. Primuline is dyed upon cotton by the so-called “three-bath” process, which provides for the diazotization of the color on the fiber and its final development with a suitable developer, the most common being betanaphthol, and produces the red above referred to. This group of colors was first limited to a few shades, possibly six, none being either a blue or a black. This disadvantage was at once apparent, and stimulated research, so that in due time diazotized blacks and blues came upon the market. The blacks appeared to offer particular advantages, especially as competitors of aniline black for hosiery dyeing. Indeed, a number of the best known brands of hosiery on the market are dyed with developed black.

The industry of the sulphur colors commenced by Croissant & Brétoniere in 1873 has been greatly extended, and from which has been given a great number of dyes of the utmost importance. Their field of usefulness is almost confined to the dyeing of cotton. The blacks of this group have, together with the diazotized blacks, been the active competitors of aniline black, while the sulphur blues have, in many instances, replaced indigo for certain lines of cotton manufacture. The sulphur color industry is actually the starting point of the now firmly established “vat color” industry, although but few of the vat colors are made by any of the processes used in producing sulphur colors. The extensive group of vat colors includes a considerable number of dyes that are remarkable for their extreme fastness, and it was the general use of these dyes that gradually educated the people as to what a really fast color is.

The so-called vat dyes are divided into two main groups designated respectively indigo dyestuffs and anthraquinone. The chemistry of both of these two groups is rather complicated,

and it will serve no useful purpose by going into the details of the reactions. For convenience, however, the following classifications may be introduced:

(a) INDIGO DYESTUFFS

- (1) Indigo group.
- (2) Ciba violet group.
- (3) Thioindigo group.
- (4) Indi rubin group.
- (5) Thioindigo scarlet group.
- (6) Ciba scarlet group.

(b) ANTHRACHINONE DYESTUFFS

- (1) Indanthrene group.
- (2) Flavanthranone group.
- (3) Benzanthranone group.
- (4) Anthrachinonimide group.
- (5) Acylaminochinone group.
- (6) Anthrachinonacridone group.
- (7) Vat dyestuffs of unknown composition.

(c) VAT COLORS CONTAINING SULPHUR

- (1) Anthrachinone bodies.
- (2) Carbazol bodies.

This particular group of dyestuffs has excited remarkable interest ever since they were put upon the market; not alone from the chemical standpoint, but also from the fact that the practical results obtained from their use enabled manufacturers of cotton goods to greatly extend their line of woven and printed novelties, carrying at the same time a guarantee as to fastness and durability of shades that startled the industrial world in those lines of cotton manufacture known particularly as wash goods, ladies' and children's summer garments, men's shirtings, madras cloth and similar fabrics, carrying shades of blue, red, pink and combinations that emerged from the laundry quite intact. The study of the vat colors is most interesting. It should be borne in mind that the great majority of the patents granted for these particular colors are still in force, and this fact alone is likely to mitigate against the possibility of the more important of the dyes so protected being manufactured in this country, even after the present war is terminated. There is every reason to believe that the German holders of patents for these valuable dyes will exert every effort to retain the manufacture of these

dyes for and in Germany, and that it is hardly likely that licenses will be granted to American dye manufacturing plants permitting of the manufacture of even some of the most wanted of this group of colors. This condition, however, should not prevent a special effort being made on the part of dye chemists, professors of organic chemistry and advanced students of that particular branch of organic chemical work from devoting their undivided time and attention to the investigation of problems aiming to the production of further additions of dyes to this important group of colors. This is a most prolific field and one worthy of very serious thought on the part of chemists.

In this particular connection and relating very closely to this same group of coloring matters may be mentioned work done within very recent years. I take the liberty of making reference to a particular blue that requires as one of its chief raw materials a substance that has heretofore been regarded as an industrial nuisance, but which, due to

the painstaking care of the investigating chemists, has been made available for the production of a coloring matter that possesses a shade equal to and properties excelling in fastness those of indigo. I refer to carbazol, which, prior to this time, had been of no commercial or industrial value whatever, which has been found closely associated with anthracene as an impurity, and from which latter it has to be separated by a process fraught with some difficulties. Carbazol has been made available for textile purposes by being converted into the blue dye applied in a manner similar to indigo in the "vat," and which produces indigo shades from the lightest to the darkest with great facility. For its production it is simply a matter of obtaining carbazol, and when this product is secured in sufficient quantities there is no doubt but that the dye industry and that portion of the textile industry most interested will receive a great impetus.

In mentioning carbazol as a prolific source for chemical investigation, I might also include a number of equally well known and troublesome organic impurities found in other coal-tar distillates, which only await the attacks of the painstaking industrial chemists to find ways for their commercial utilization.

(To be continued)

With a capital of \$60,000, the Masson Dyeing Co. was recently incorporated under the laws of New Jersey. The concern will manufacture dyes, chemicals, etc., in Jersey City, that state.

At an estimated cost of \$40,000, the Mianus Manufacturing Co., New York City, will erect a 4-story, 42x145 dye-house at Cos Cob, Conn. The building will be built of reinforced concrete.

CUTCH ON COTTON AND OTHER VEGETABLE FIBERS

By P. MONTAVON

The following study of recent research in connection with the applications of cutch appeared originally in the "*Revue Generale des Matieres Colorantes*," and was translated by a writer for the *Textile Colorist*, from which it is herewith reprinted:

Cutch came to its own again when there was a shortage of artificial dyestuffs. This led J. J. Hummel and R. B. Brown to make researches on the usual ways of dyeing with this vegetable coloring matter, and they paid special attention to the effect of the addition of sulphate of copper to the cutch bath. They experimented with twenty-nine varieties of Indian cutch submitted to them by the Imperial Institute, but these were repetitions of researches on the two principal compounds, catechin and catechutannic acid, of which all varieties of cutch are composed in more or less quantities.

Limited in this way, these researches were hardly conclusive in face of the fact that they bore only on a part of the problem, which may be stated as follows: Given that copper is necessary for the complete development of the coloring matter of cutch by oxidation, to find a logical and efficacious method of making it act. This problem, which Hummel and Brown have merely touched upon, I claim to have resolved more than thirty-five years ago, as I will endeavor to demonstrate.

Considerable quantities of brown cutch are consumed at present. Yellow cubical cutch (gambier) is hardly used, except in calico printing, and can be left out of consideration. The sorts of cutch with a brilliant fracture are most in request—that is to say, the most soluble kinds. Cutch is used in dyeing Havana, nut-brown, chestnut, and dark beige shades, and as a bottom for olives, fawns and other aniline dyeings. It is also used as a bottom for a fast logwood black.

Two methods principally have

been used in dyeing with cutch. The first, and the most employed, consists of steeping the cotton in a bath of cutch and sulphate of copper and after-chroming. In the second method, the cotton is dyed in the cutch bath, with or without the addition of sulphate of copper; the color is then fixed with a salt of iron, and after rinsing it is oxidized in a boiling bath of chrome.

These processes introduced at Thaon by old foremen from Rouen and Mulhouse were all very well for common goods, but they gave a cloudy dyeing, lacking transparency on fine tissues, such as satinette and mercerized fabrics. This cloudiness arose from the more or less turbid dyebaths, and disappeared when boiling limpid bath of cutch, free from sulphate of copper, was used; but at the same time the shades obtained were not so full. As, therefore, the copper seemed to be indispensable, I endeavored to add it to the chrome bath, and in this way I obtained results even better than expected. The method of application was as follows:

The tissue was padded on a machine with the lower roller covered with fairly hard india rubber and the upper roller of metal. A short bath constantly renewed was used and heated by a serpentine. After two passages the cloth was chromed on the jigger with 3 per cent of bichrome and 2 per cent of sulphate of copper for a medium chestnut shade, then thoroughly rinsed. The cutch bath was made with 10 per cent of

coloring matter, which, after complete solution, was passed through a sieve in order to free it from impurities. When it is noted that any solution of cutch, even a weak one, will deposit on cooling, the necessity of thoroughly stirring and heating to a state of perfect liquidity before pouring into the padding trough is emphasized. The cutch solution above can be reduced according to the shade desired.

This method has in addition the advantage of allowing a mixture of cutch and the majority of the dye-woods to be made, in order to obtain any tint of brown directly and without the necessity of topping. For instance, Cuba wood or other yellow extract can be added to the bath to get the yellowest tints of brown. Brazil wood and other red extracts give a more violet brown. Sumac, myrobalan, chestnut and other tannins modify the too red tint of the cutch; logwood added to any combination deepens the shade and tends to avoid the necessity of a second treatment.

I have also tried with success a mixture of cutch and Cachou de Laval in the same bath. This idea allowed me to produce the less red and deeper tints required by the army.

By analogy with wood extracts I tried the effect of an alkaline bath to increase the solubility of the cutch, but the dyeings obtained were lighter and thinner. I also found that treatment with salts of iron after chroming increased the labor and expense without any useful result.

A NEW CLASS OF VAT DYE-STUFFS

Dr. Richard Herz, of Frankfort a.M., describes (Amer. Pats. 1,243,170 and 1,243,171) a new class of vat dyestuffs available for imparting a wide variety of shades to vegetable and animal fibers. This series, containing nitrogen, sulphur and chlorine in their molecule, results if an excess of disulphur-dichloride (S_2Cl_2) is allowed to react on such aromatic aminocompounds and derivatives thereof, which contain in their molecule at least one primary amino group and one free ortho-position thereto. The manufacture is essentially as follows:

The products of reaction of an excess of disulphur-dichloride on aromatic aminocompounds or derivatives thereof are first treated with water or dilute alkalis, and are then condensed in an alkaline solution with monochloroacetic acid, whereby products of condensation are formed possessing the character of aromatic

o-amino-carboxylic acids. These latter substances are then diazotized, and in the diazo compounds thus produced the diazo group is substituted by cyanogen, thus nitrile compounds being obtained. These nitriles are suitably treated with alkalis, alkaline sulphides, alkaline disulphides, or acids, whereby they are saponified and simultaneously transformed into ring compounds. These, by a further suitable treatment, preferably by heating with dilute acids and subsequent oxidation, produce the valuable vat colors. They contain sulphur in their molecule and yield on animal and vegetable fibers shades varying from orange, red to purple, violet, brown and black, which are distinguished by their brightness and their unusual fastness to chlorine, severe washing, scouring, crossdyeing and bowking.

Aniline, o-toluidine, m-toluidine and p-xylidine are cited as desirable starting materials. Aniline yields crimson shades; the others yield pink shades. The general process is evident from the following example:

One hundred kilos dry, well-ground o-toluidine-hydrochloride are heated in a suitable vessel, fitted with a stirrer, with five to ten times the quantity of disulphur-dichloride, to 50 to 70 deg. C., until a test can no longer be diazotized and coupled. It is then diluted with an anhydrous, inert agent, such as naphtha, benzine, ligroin, etc., the separating body is removed by suction, washed with one of the hydrocarbons mentioned, freed from any excess of disulphur-dichloride that may adhere to it, and dried, preferably in a vacuum at as low a temperature as possible. One hundred and twenty kilos of the product thus obtained are stirred to a paste with about four times the quantity of alcohol and, while gradually stirring, are introduced into 1,000 liters alcohol of 50 per cent and 250 kilos caustic soda lye 40 deg. Be. It is an advantage to add to this mixture about 50 kilos sodium hydrosulphite.

This mass is first cooled so that the temperature of the reaction may

not exceed 30 deg. C. After some time the whole is gradually heated to 70 deg. C. and the stirring is continued at this temperature until a test no longer becomes turbid when diluted with water. A neutral or slightly alkaline solution of 55 kilos monochloroacetic acid in about 250 kilos-liters water and 67.5 kilos of caustic soda lye, 40 deg. Be., are now added, the whole being heated for from two to three hours at 70 to 80 deg. C. Condensation being completed, the alcohol is distilled off, the whole is filtered and the condensation product in solution may be directly used for the production of the vat dyestuff.

The solution of the condensation product, obtained as described above, is charged with about 40 kilos sodium nitrate; the mixture is then gradually introduced while stirring well in dilute cold hydrochloric or sulphuric acid (for instance, 200 kilos hydrochloric acid concentrated, 500 liters water and 500 kilos ice). The resulting diazocompound remains in solution with a yellowish color, is neutralized and gradually added under constant stirring to a solution of cupro-cyanide (obtained from 125 kilos copper sulphate and 113 kilos potassium cyanide). The reaction being complete, the neutral solution is filtered off and the nitrile separated by acidifying from the filtrate as a yellowish white crystalline precipitate.

The saponification of the nitrile so formed and the formation of the ring body containing sulphur may be carried out by several methods. The following is an advantageous process:

Twenty kilos of the nitrile are heated with 100 kilos sodium sulphide crystals and 20 liters water, about one-half to one hour, to 70 deg. to 100 deg. C. The sodium salt of the new ring compound separates when heated in shining leaflets; the whole is then allowed to cool, diluted with a solution of common salt, and the separated precipitate filtered off.

The sodium salt, obtained and described above, is dissolved in water charged with dilute sulphuric acid, and the acid solution is heated in the reflux

condenser until the separation of the carbonic acid and the ammonia is complete. The whole is then allowed to cool and the precipitate is filtered off. For transformation into the red vat color, the precipitate is dissolved in dilute caustic soda lye, and a current of air is passed through this solution until all the dyestuff separates in crimson flakes.

The dyestuff is filtered off, washed out well and preferably used straightaway in paste form. When dried it is a red powder, which dissolves in hot nitrobenzene with a bluish red color and yellow fluorescence, in warm concentrated sulphuric acid with a dark green color, in the alkaline hydrosulphite vat it dissolves with a yellow color and dyes cotton and wool pink shades, which surpass by their unusual purity of shade and their excellent properties of fastness all pink vat dyestuffs on the market. In exactly the same manner from the products of reaction of disulphur dichloride on m-toluidin and p-xylydin vat dyestuffs are obtained which dye in the alkaline hydrosulphite vat cotton and wool bluish pink shades with similar properties of fastness and purity.

NOTES OF THE TRADE

Southern mills will be interested to learn that the American Aniline Products, Inc., of New York, have taken new and larger quarters for their Southern office and laboratory at 214 Main Street, Danville, Va., and that they have opened at the same address a large warehouse where they are carrying an ample stock of their colors. This will enable them to render more efficient service by supplying the Southern trade direct from Danville.

An agency is desired by a man in Italy for the sale of all kinds of dyeing materials for skins and fabrics of all kinds. Correspondence should be in French or Italian. For references and further details, readers interested should communicate with the U. S. Bureau of Foreign and Domestic Commerce, or any of its district or co-operative offices, mentioning File No. 27,310.

The spring color card has just been issued by the Textile Color Card Association and carries thirty-four new shades for the approval of those interested, with blue in the ascendancy. Although the card contains a total of forty-four shades in the aggregate, ten of these have been carried over from other seasons.

All phases of the chemistry of dye-stuffs will be discussed at the "Dye-stuff Symposium," to be held Tuesday, Sept. 10, by the American Chemical Society in Cleveland. The hour set is 2 o'clock, when a number of papers will be presented by experts, to be followed by a general discussion. It is expected that the meeting will be continued over

into Wednesday morning, and the hope is that it will be followed by regular meetings hereafter of those interested in dyestuffs who attend conventions of the A. C. S. The society's announcement concludes: "As this (the chemical) phase of the dyestuff industry is so essential to its ultimate development, we are asking hearty co-operation of all interested in this industry."

With the purpose of acting as a distributing center for raw materials, and to safeguard the interests of its members, both now and during the transition period following the war, an association of German dye manufacturers, whose products include finely ground dyes, has been organized in Berlin. The membership includes practically all firms affected.

With a capital of \$50,000, the Special Materials Company has been incorporated under the laws of New York to manufacture drugs, chemicals and dye-stuffs. The firm will have its headquarters in Brooklyn, and the incorporators are L. H. Wallace, G. Lau and C. A. Spencer, 60 South Elliott Place, that city.

Figures made public recently show that the United States now holds within its borders the largest dyestuff industry anywhere in the world outside of Germany. The total capitalization of the industry is put at more than \$200,000,000 and there are now some 125 factories engaged in the manufacture of dyes where but six flourished prior to 1914.

Inability to secure adequate supplies of raw materials has led two English manufacturers of logwood and fustic extracts in Liverpool to abandon production of these products, according to consular advices received here. One of these firms has gone on record as willing to purchase from any reliable firm in the United States which can offer the best value.



AMERICAN DYESTUFF REPORTER

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"Carry On"

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Dyestuffs: Part III

By Dr. Louis J. Matos

THE
American Dyestuff Reporter

will issue two

Special Numbers

in connection with the

*Fourth National Exposition
of Chemical Industries*

to be held at

Grand Central Palace, New York

September 23rd—28th inclusive



Reservations of Advertising Space Should be Made at Once

AMERICAN DYESTUFF REPORTER

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DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

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New York, September 2, 1918

No. 10

ENGLAND PREPARES TO "CARRY ON"

With the First Phase of Their Struggle Over, British
Manufacturers Take Steps to Protect Their Future

IT is becoming increasingly evident as time goes on that there is in England a growing uneasiness regarding the effect of the rapidly expanding American dye industry upon the future supremacy of the English markets.

Perhaps this feeling should hardly be alluded to in the above manner, for it is as yet too vague and intangible to be seized upon and defined in any such arbitrary fashion. But it exists. One has only to scan the pages of recent English trade literature in order to find here and there the faint wisps of smoke which indicate so surely the hidden but smouldering conflagration beneath the surface.

There should, however, be no mistakes made as to the exact nature of this feeling. Such would be most unfortunate. Let the reader understand, once and for all, that it is perfectly friendly and that it will remain so. Indeed, it might be said that if England were compelled through force of circumstances to see her dye industry, and, in consequence, her

textile industry as well, in the hands of an outsider, she would far rather have it in the hands of this country than in any other—and, of course, any country at all, almost, rather than Hunland. But she does not propose to let this occur; that is all. And, at length, after the first mad frenzy to lay plans for turning out acceptable colors following the cataclysm of 1914, she takes serious thought as how best to prevent this.

The United States, then, is literally coming to be viewed in England as a rival of Germany in the future coal-tar chemical industries of the world. The difference in the feeling toward the two countries is, it goes without saying, limitless, and not to be spoken of in the same breath. But, shorn of all personal considerations, this is the fact which stands out—and it is only natural. There has been too much said of the relation of the dyestuff and explosive industries already for us not to appreciate why it is altogether fitting and proper that this should be so, and as exponents of the premise that the world must be made safe for

democracy we should regard it as desirable that all our allies be adequately equipped to defend themselves and all of us in case the occasion ever again arises.

As everyone knows, the tail of the British lion, so far as synthetic colors went, received a most excruciating twist in 1914 at the hands of the Teutonic Dye Ring. This was entirely analogous to our experience over here, and, in common with others, Leo yelped savagely, looked four ways at once, and for some months was seen to flounder about madly in an attempt to get the kinks out of his caudal appendage. Then sanity prevailed and comparative order was restored as English dye chemists went methodically to work to build up slowly and painstakingly the fundamentals of the industry. From then on the march of their progress has been steady and their scientific advance practically unchecked, until, at the present writing, they are at last in a position to draw breath, as it were, and look about them to get a better perspective on the situation and its future aspects.

And one of the first results of this interlude has been to see that, unless provisions were made to offset us, the United States might some day occupy the position in the English dye markets which Germany once did. And while there is no doubt but that such an arrangement would have been an entirely amicable one, it was not to be desired—nor should we ourselves desire it, for there is plenty of room for both in foreign fields.

Announcement has now been made that an approach to the fulfillment of the promise made of governmental assistance to the British dye industry has taken the form of grants for re-

search. These include £1,000,000 for this purpose, which represents the first installment of a total sum of £2,000,000 to be provided for the purpose of assisting, by way of loans, etc., the expeditious development of the industry by our English cousins. The total expenditure is to be spread over three years, and divided as follows: £1,250,000 in loans at not less than 1 per cent above banking rates, with a minimum of 5 per cent, repayable in twenty years or earlier if the profits of the manufacturers are more than 9 per cent; £600,000 for contributions in aid of extensions of factories and buildings, and £150,000 to be expended in aid of research. The vote for this step was taken in the House of Commons last month.

In connection with this, the *Dyer and Calico Printer* remarks that "the offer of the Government to extend financial aid to dye firms in addition to those concerned in the amalgamation scheme, for the purpose of research work and extensions, is so tempting that it was pretty certain that overtures would be made to take advantage of it. In their initial stages these overtures are not proclaimed from the housetops, but one firm has had the courage to announce that it has entered into negotiation for aid. Mr. H. N. Morris has interviewed the president of the Board of Trade, and if the Government are as good as their word interesting developments should follow. It may be noted that Mr. Morris is dubious as to the full success of the combination of the two big dye firms. It is a question, as he sees it, of pitting all that is represented by a capital of only two or three millions against the enormous combination of chemical and dye interests in Germany, and also in the United States. But here we are back again at problems that cannot be solved now—problems as to the precise bases of peace and also of the control of raw materials. We cannot, between now and the termination of the war, build up an organization powerful enough to meet competition and combinations on a pre-war foot-

ing, but the building process can be going steadily on, and the furtherance of research work is one of the sure means of meeting our coming trade responsibilities. That is one reason why the Government offer should attract more takers."

From the foregoing can be gained a fairly good conception of the present British attitude toward the dye situation. It is not unlike our own. It is not, for one thing, quite so sanguine as it once was. With the recent developments on the Western front, it is beginning to be felt that time, the most valuable ally of the industry, is getting comparatively short, when one considers the complexity of the task which yet remains, and steps must be taken now to protect the industries of both countries while their growth continues.

Speaking of a discussion between Roscoe Brunner, of Brunner, Mond & Co., and H. N. Morris, of the firm which bears his name, who are at variance over the proposal to carry on the British chemical trade in well-defined divisions, our English contemporary cites the fact that these two gentlemen have this in common, they are both anxious not only that the industry should hold its own after the war, but that it should contribute actively and positively to the development of the technical industry of the British nation. "That," it continues, "differences notwithstanding, is a good starting point for attaining some measure of common understanding. The chemical trade will have a great fight for it in the coming days, and there will have to be some organization to meet that fight. The Germans, who are betraying more anxiety than ever to get back to industrial times—which means that they are preparing, if not already prepared—are, as we all know, well organized, and there is also the fact that the American combinations will have to be reckoned with in a greater degree after the war. Whether the division of the chemical trade into four sections will help matters, as Mr. Brunner thinks, or will result in over-

lapping and chaos, as Mr. Morris declares, is a point not to be settled by abstract discussion. Nor can it be settled at this stage even by practical men. Much depends in this, as in other affairs, on the kind of end the war makes. The one thing that emerges clearly is that the governing spirits of these concerns are awake to the fact that post-war conditions will have to be met by new means."

There are other examples from which we might quote, but the above two are fairly eloquent of the thoughts which are now uppermost in the British mind. It is the writer's conviction that if there are at present any who regard the English dye markets in the light of easy picking in the years to come, they will do well to abandon the idea. It will be best for all concerned that both England and America have strongly entrenched and self-contained coal-tar chemical industries, and that the two countries work as one to further this object. What rivalry there is can be in the matter of the more highly com-

plex and difficultly obtainable shades—the pampered aristocrats of the industry, so to speak—and in the foreign markets of China, South America and elsewhere.

SOME SPECIAL METHODS OF BLEACHING

As is well known, lime lyes, carbonate of soda, caustic soda, with chemicking and souring, form the basis of the bleaching of the textile fibers of vegetable origin. Besides these classic methods there are, however, other methods and other products employed in certain particular instances, which are at least of some interest. In a contribution on the subject to *L'Industrie Textile*, M. Tailfer discusses these exceptional methods, especially the use of silicate and perborate of soda in bleaching. He recalls the Watremez process of preparing vegetable fibers for facilitating their bleaching. This process consists in treating the natural coloring matters of the fibers by those metallic salts of which the corresponding oxides are but little soluble in water, and excluding the salts containing an alkaline metal as the only metal, excepting when it is necessary to constitute an alkaline medium. This treatment of the fiber eliminates the greater part of the natural coloring matters, and makes those not eliminated easily destructible by the bleaching agents. An example is given: 1. The boiling out—To prepare a liquor of 1,000 litres, 10 kilos. of crystallized alum and 5 of carbonate of soda are dissolved in water; when the disengagement of carbonic acid is ended and solution effected the precipitate formed is dissolved by the addition of 20 litres of caustic soda (60 deg. Tw.), and then the needed amount of water. The ma-

terial to be treated is entered and the bath heated; decolorization commences rapidly and before the boil is reached; boiling is continued for about two hours, at the end of which the liquor is allowed to cool, by preference with the material still in it. The material is next washed in running water or treated with water slightly acidulated by hydrochloric acid to eliminate the excess of alkali. Nothing is to be gained by operating under pressure in a closed kier, since this mode of boiling-out gives a loss in weight which is avoided by boiling without pressure. After the boiling operation a large part of the coloring matters has been eliminated, and any that remains is in combination with the metal; if the oxide of this metal is not colored, and if the fibers treated are easy to bleach, the bleaching may be proceeded with immediately. 2. Attacking the metallic salts existing on the fiber after the boiling-out—The material is treated with agents capable of modifying these metallic salts; as far as aluminium is concerned, good results are obtained by means of sulphuric acid (0.2 to 0.3 per cent).

Other compounds may also be used for this treatment, such as the alkaline sulphides; in this case it is well to destroy, with an acid, the sulphide compounds so formed in the fiber. In general this treatment suffices for the production of a good white after a few hours' impregnation in the ordinary chemic liquor of medium or low strength. Yet for certain fibers usually rather difficult to bleach it may be necessary to give a second treatment with the metallic salts, that is, renew the attack, before proceeding to the chemicking, on the remaining natural coloring matters, after having removed the metal used in the first operation. For instance, it is convenient to treat with a 0.6 to 1.2 per cent solution of bisulphite of soda along with 0.2 to 0.4 per cent of hydrochloric acid to dissolve a metal such as copper, chrome, or manganese; then rinse in cold water, and pass through the chemic liquor as previously. It is to be remarked that by treating the fiber with a salt of copper or of chrome on azure good white re-

sults, the azure tone being easily caused to disappear by the action of all bodies capable of dissolving the corresponding oxides, such as nitric acid. If manganese salts have been employed the treated fiber is colored yellowish, and it is therefore necessary to prolong the action of the chemic until the tint is quite uniform on the material, and then the oxide of manganese may be removed, for instance, by sulphurous acid. The Watremez process presents the advantage of being very economical, since the manipulations are reduced to the minimum, the materials employed are less costly, and the treatment rapid. According to the author of the process, the white obtained is very pure and the loss in weight of the material treated insignificant, because only the natural coloring matters of the fibers are attacked to the exclusion of the cellulose supplying them.

Silicate of Soda.—Lyes of silicate of soda find frequent employment in the boiling-out of cotton fabrics and their bleaching. It has been asserted that the action of commercial silicate of soda on

the cotton fiber is in all points comparable to that of caustic soda. The detergent property of commercial silicate of soda is due in effect to its caustic alkalinity, since silicate may be regarded in sum as nothing more than a colloidal solution of silica in caustic soda, in which, under certain conditions, the salt and the gel preserve their respective properties. In 1906 Bacon succeeded in preparing a crystallized silicate of soda of definite composition. Experience has demonstrated that the detergent properties of crystallized silicate of soda are far higher than those of ordinary silicate. Linens from the hospitals, and soiled or infected cloths, can only be treated efficiently and in hygienic conditions by this product, which has astonishingly antiseptic properties. Under its action the fiber shrinks slightly and acquires strength. The presence of silica exercises a true mechanical action as a dirt remover. In Normandy a mixture of carbonate and silicate of soda has been used with very good results as a lye in the bleaching of linens.

Textile Colorist.

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butions appreciated

A. P. HOWES, Editor and Publisher

CONCERNING OURSELVES

In our issue of August 12 we described at some length the part which we believe publicity must play in securing the permanent establishment of the American dyestuff industry. In particular we mentioned the scope of the dyestuff trade publications and outlined the plans which we have in mind for the REPORTER.

As we pointed out at that time, it is self-evident that before a trade publication can become a weighty factor in its field it must have the hearty co-operation of its readers and this co-operation must be evidenced by paid subscriptions.

During the past two weeks we have been asking those of our readers who have been receiving the REPORTER without charge to co-operate with us to the extent of entering their subscription for one year from

January 1, 1919, at the regular yearly rate of \$3.00.

This seems to us an eminently fair proposition. When we began publication of the REPORTER, on October 1 of last year, we announced that it would be distributed to every consumer of dyestuffs in the country for a reasonable period without charge. This probationary period is now past and within a very short time we shall be compelled to eliminate our complimentary list altogether. It seems to us only right that those who have received the REPORTER each week for eleven months without charge should be willing to pay for it during 1919—particularly when we offer to continue the free distribution up to the first of the year.

We are very glad to say that the response to the letters which we have been sending out has been most satisfactory, and we wish to take this opportunity to thank those who have sent in their subscriptions. It has been impossible to write an individual acknowledgment in each case, but we wish to assure all who have responded that each subscription was appreciated to the full.

There are still a great many, however, who have not acknowledged receipt of our letters, and these we would urge once more to favor us with their subscriptions. Bear in mind the fact that the chief mission of the REPORTER is to promote everything which is for the good of the American dyestuff industry, and in particular to oppose at every turn the re-establishment of the German influence in this country. Your subscription will forward this work. It is a patriotic cause and worthy of your wholehearted support. There is a coupon at the bottom of this page. Won't you sign and return it to us to-day?

Announcement has been made by the Cassella Color Company, of New York, that the capital of this firm has been reduced from \$50,000 to \$15,000.

DYESTUFFS

BY DR. LOUIS J. MATOS

We give herewith the third installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute*, and which, for the benefit of our readers, we are reproducing in four parts.

PART III

At this point the lecturer directed attention to a number of illustrations, several of which are printed herewith. The first was a diagram of a coal-tar

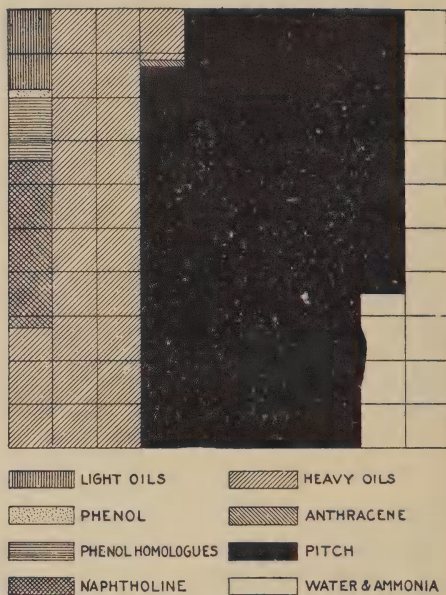


FIGURE 1

tree, showing the general relationship that the finished dyestuffs have toward coal tar. By this tree we immediately grasp the idea that upon the destructive distillation of tar certain prime raw materials are obtained, which, when subjected to further chemical treatment, are converted into the so-called intermediates that the dyemaker employs for the production of the finished dyestuff. Coal tar itself is a by-product of the destructive distillation of coal, either from the illuminating gas-making process or from other operations where tar is recovered. During the process of distilling coal, illuminating gas is obtained, and during the operation of washing this gas, ammonia is recovered. The

residue remaining in the gas retorts is coke. When coal tar itself is subjected to destructive distillation, it breaks up into a number of raw materials, including benzol, carbolic acid, cresoles, naphthalene, anthracene, heavy oils, and leaves a large residue of pitch, the exact composition of which is known to vary, but which is still a subject of fruitful investigation to chemists.

The diagram reproduced (*Fig. 1*) shows graphically the average percentage composition of coal tar. Each square represents 1 per cent. The small amount of phenol or carbolic acid actually in tar is indicated, as well as the small amount of anthracene. It is this small amount of anthracene that carries a small, though available, amount of carbazol, to which I have previously alluded.

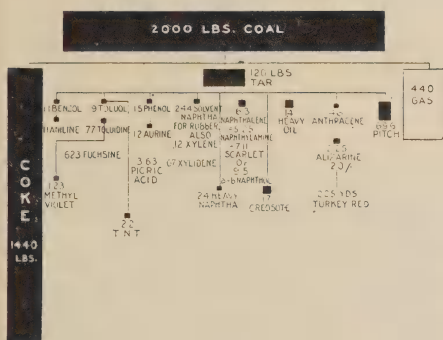


FIGURE 2

Figure 2, herewith, is a diagram showing the average quantity of distillates obtained from 2,000 pounds of coal, together with the quantities of a few of the important dyestuffs which some of these distillates produce.

Figure 3 shows the sequences of events for the conversion of benzol and toluol into the well-known dyestuff magenta or fuch sine.

Figure 4 represents the chain of operations necessary for the conversion of the primary raw material—naphthalene—into naphthol yellow.

Figure 5 is of particular interest, and shows graphically the so-called aniline process for the manufacture of synthetic indigo, from which we see that there are three primary methods having

this object in view, all of which, however, aim to produce phenol-glycene, which is then subjected by one of three

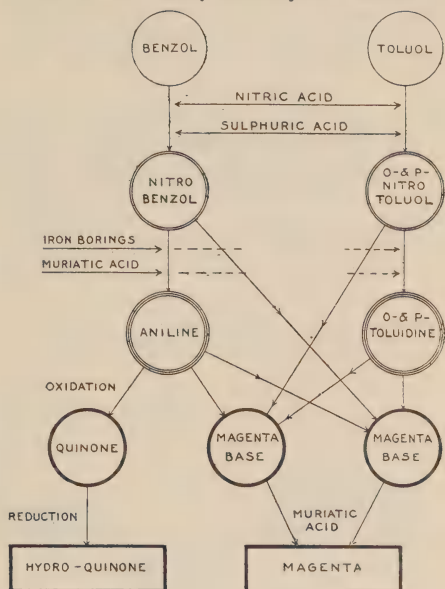


FIGURE 3

processes, according to patent limitations, into indoxyl, and as this latter product is then, by the oxidizing influence of the air, converted into indigo.

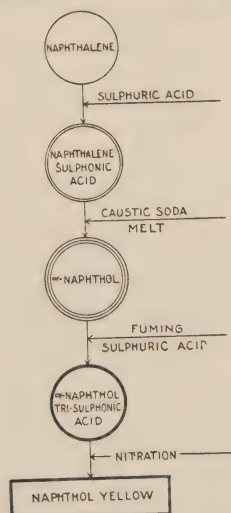


FIGURE 4

The so-called naphthalene process is shown in *Figure 6*. This process has for its object the conversion of naph-

thalene into indigo, and is known as the phthalic acid process. The main product obtained is phenylglycine-o-carboxylic acid, which is fused with caustic soda, producing indoxyl, and this latter by oxidation is changed into indigo.

These several indigo processes which I have shown are rather complex, but this complexity need not stand in the way of well-directed students in our organic laboratories for undertaking the work under competent directors.

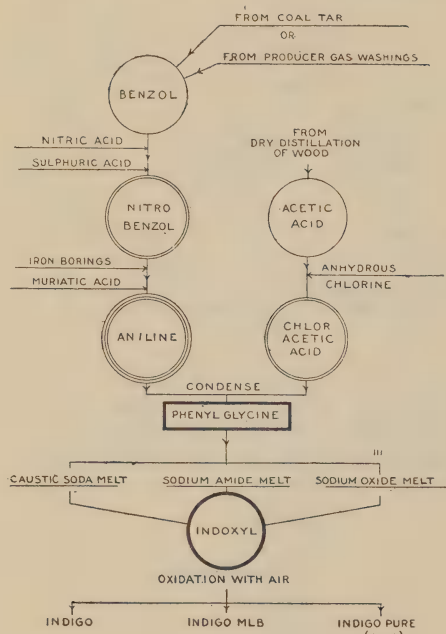


FIGURE 5

There is not the slightest doubt but that investigating students, equipped with personal laboratory manipulating ability and supplied with the necessary patent literature, should be able to carry out, first, upon a laboratory, and, second, upon a semi-factory scale, every operation involved in the production of this most important coloring matter, and the practical technical information thereby gained would be of the greatest value for further industrial research.

There were also shown a succession of diagrams illustrating graphically the manufacture of naphthol black, which includes the manufacture of beta naph-

thol, the conversion of beta naphthol into R-salt and G-salt, which are formed simultaneously and separated finally, as shown in Figure 7, and the

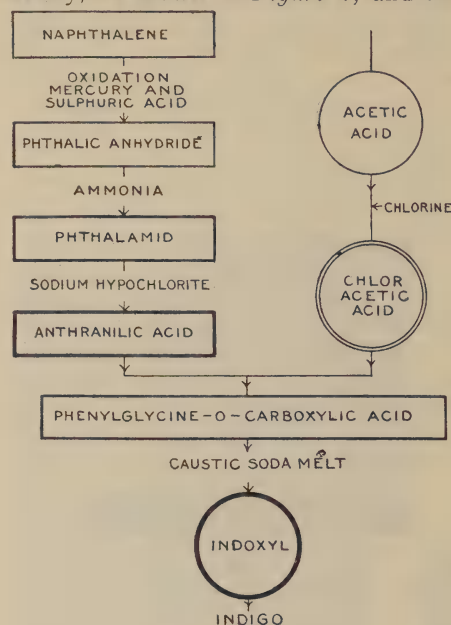


FIGURE 6

conversion of the R-salt into the completed dye.

The manufacture of cyanol was illustrated by a succession of slides showing the production of crude benzaldehyde, the conversion of that substance successively into nitro-benzaldehyde, amido-benzaldehyde and oxy-benzaldehyde.

There were also shown illustrations of the process for the production of ortho-nitro-toluol, its conversion into ortho-toluidine, and the ethylating of the same, and, finally, as shown in Figure 8, the condensing operation and finishing of the completed dyestuff.

From an inspection of the several

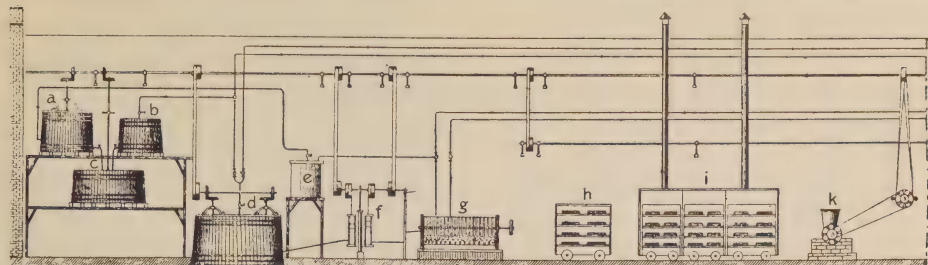


FIGURE 7

a, Vat for diazotizing the *b*-naphthylaminedisulpho acid; *b*, vat for dissolving the *a*-naphthylamine; *c*, vat for producing the amidoazonaphthaline-disulpho acid, and for diazotizing the same; *d*, vat for combining the diazoazo body with R salt; *e*, vat for producing R salt solution; *f*, duplex pump; *g*, filter press for the finished naphthol B; *h*, truck for the moist dye; *i*, drier; *k*, grinding mill.

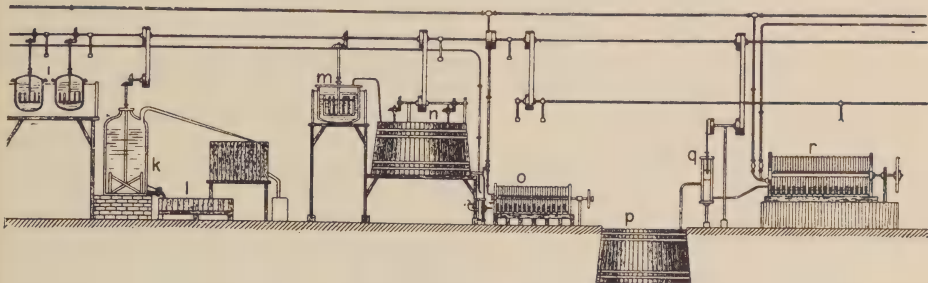


FIGURE 8

i, Kettles for condensing oxybenzaldehyde with mono-ethyl-*o*-toluidine; *k*, still for recovery of unconverted ethyltoluidin; *l*, filter for the condensation product; *m*, sulphonation kettle; *n*, vat for diluting and oxidizing the sulphonation; *o*, filter press for lead sulphate; *p*, neutralizing, and salting-out the dyestuff; *q*, filter press for the finished dyestuff (cyanol).

figures we are impressed with the fact that dye manufacturing is not entirely chemistry, but is an industry that depends very largely upon the ability of the chemical engineer specially trained in dye making and dyeworks equipment. After the preliminary outline of the process has been worked out, the results of his labor are taken up by others in the plant and gradually brought to manufacturing perfection, and it depends in a great measure upon the commercial importance of the dye in comparison with dyes known prior to this discovery. If it possesses properties of fastness not assured by the older dye, its field of usefulness is thereby enhanced.

(To be concluded)

NOTES OF THE TRADE

This is undoubtedly an opportune time to introduce synthetic indigo and aniline dyes from the United States into China, according to a re-

cent report of U. S. Consul Myrl S. Myers, writing on trade conditions at the port of Swatow. According to his advices, manufacturers of this country shipped only \$89,570 worth of dyestuffs thither last year, as against \$122,768 in 1916. The principal dyes shipped to that port have always been those mentioned, but neither was included among those sent in 1917.

With a capital of \$100,000, the Noel Color & Chemical Works, of Manhattan, has been incorporated under the laws of New York State.

Creditors of the American Synthetic Color Company will have until September 3, 1918, in which to file their claims with Receiver John W. Throckmorton, 372 Atlantic street, Stamford, Conn. The concern recently became defendant in an action brought by the Getman & Judd Company.

COLORING MATTER IN COTTONSEED OIL

The properties of the coloring matter of cottonseed oil have been studied by a number of patentees of processes for its removal during refining. The color has been called "gossypol" and has the empirical formula $C_{13}H_{14}O_4$. It is insoluble in water but is readily soluble in alcohol, benzene, other organic solvents and dilute salt solutions. It is insoluble in dilute acids and strong brine solutions but is readily soluble in boiling acetic acid and aqueous alkalis.

A very large number of methods, based on the solubility of the coloring matter in aqueous alkali have been suggested for its isolation or removal, but none has received such universal approval as the caustic soda method. Normal sodium carbonate, as it has little saponifying action on oil during the refining process, has been suggested. Sodium chloride has been used with caustic soda, to salt out the compound formed, but though the graining out is better, salt interferes with the removal of the color. The resultant oil is found to be poorer in quality and deeper in color.

Alkali silicate, and also metal substituted bases with an alkali reaction, have been proposed and one patentee uses with alkali silicate substances which produce soap, such as hydroxides, carbonates and other alkali compounds. Another process first neutralizes with caustic alkali and then fixes the coloring matter with silicate. K. H. Vakil has tried this method repeatedly and found that the foots settle down rapidly, retaining very little refined oil, but the refined oil is poor and similar to that obtained by the salt-caustic soda process.

A recent patent employs either an inorganic absorbent material such as fuller's earth in presence of an electrolyte, or a fibrous vegetable matter impregnated with a slight excess of alkali to neutralize the free fatty acids. The cellulose converts the colloidal material, containing precipitated color and albuminoid matter, into a mass which is easily separated from the refined oil by filtration.

RECOVERY OF SULPHUR DYES FROM WASTE LIQUORS

Comparatively recent practice has allowed the dye content from waste liquors produced in commercial dyeing with sulphur colors to become lost, with the result that the net cost of dyeing with such colors has included the cost of the entire dye content, that unappropriated and lost as well as that taken up by the goods.

Thomas Forsyth, of New Haven, Conn. (Amer. Pat. 1,242,676), has devised a process for the recovery, for reuse, of the unappropriated or unused dye content from these waste waters.

The primary feature of the process is the neutralization of the waste liquors by the use of sulphuric acid or acid sulphates such as nitre cake, with the resultant precipitation of the sulphur dye held in solution by sodium sulphide.

The precipitated dyestuff is collected on screens of wire gauze and can be used in fresh dyeings. The filtrate is no longer capable of coloring the streams into which it may be led, or of emitting unpleasant odors and destroying animal life in the water.

With a capital of \$10,000 the Eastern Dyeing Corporation has been incorporated under the laws of New York to manufacture yarns and wearing apparel and to carry on a general dyeing and bleaching business. The incorporators are Alfred Arfstrom and Samuel L. Snyder, New York, and Orville H. Hugard, Roselle Park, N. J.

IMPROVEMENT IN THE SYNTHESIS OF INDIGO

In the evolution of of Heumann's method for the synthesis of indigo the yield of indoxyl from phenylglycin or phenyl-glycocol was materially heightened by various modifications of the original flux. At first the glycin was transformed into indoxyl by fusion with sodium hydroxide. Later, a mixture of sodium and potassium hydroxides was used. The reaction was found to be more perfect if quicklime was added to the mixture. Good results were also obtained by adding to the mixture, instead of quicklime, either metallic sodium or sodium oxide. All of these successive modifications were protected by patent.

Lee H. Cone, of Misland, Mich. (Amer. Pat. 1,211,413, Jan. 9, 1917, reissued Sept. 25, 1917), assignor to the Dow Chemical Co., finds that the yield of indoxyl in this reaction can be materially increased if these two modifications are used together.

He fuses 15 parts of phenyl-glycin potassium salt with 60 parts of potassium hydroxide, 40 parts of sodium hydroxide, 15 parts of quicklime (calcium hydroxide) and 3 parts

of metallic sodium. Working with these proportions, the yield of indoxyl varies from 65 to 75 per cent of the theoretical.

The resultant indoxyl is transformed into indigo by oxidation with an air blast.

NOTES OF THE TRADE

ITALY WANTS DYESTUFFS

A large wool spinning and weaving concern in Italy desires to secure samples preparatory to a wholesale purchase of dyes for wool in locks, cotton in locks, woolen fabrics, and fabrics of wool and cotton. Strong colors for dyeing the wool and cotton in locks and dyes capable of resisting light for the weaves of wool and half-wool are required. Terms will be cash against documents. Correspondence should be in Italian and references given. Those interested should communicate with the Bureau of Foreign and Domestic Commerce at Washington and mention trade opportunity No. 27365.

The A. H. Y. Color & Chemical Company will shortly move into their enlarged quarters at 44 North Fourth Street, Philadelphia, Pa.

The firm of L. B. Holliday & Co., Ltd., has been formed into a limited company with a nominal capital of \$1,250,000, of which \$1,000,000 has already been subscribed. They lately applied in the British Patent Courts for a license to use twenty-three German patents for the manufacture of dyestuff in the name of the Badische, Bayer, Cassella and Kalle Cos. This

license was granted on a royalty fee of $2\frac{1}{2}$ per cent of the final product and 1 per cent on the intermediates. The court stated that the applicant might apply again for a royalty on the weight basis if it were more advantageous.

The War Department has just approved the request of the Director of Chemical Warfare Service to furlough back to approved institutions a limited number of teachers of chemistry. This furlough will be administered by the Committee on Education and Special Training, old Land Office Building, Washington, D. C., upon recommendation of the officer in charge of university relations, Chemical Warfare Service.

The Westmoreland Chemical & Color Company, Twenty-second Street and Allegheny Avenue, Philadelphia, Pa., has awarded a contract for the reconstruction of the portion of its works recently destroyed by fire. The improvements are estimated to cost \$15,000. Rush J. Whiteside & Sons, 2115 Wallace Street, Philadelphia, are the contractors.

E. W. France, director of the Philadelphia Textile School, Broad and Pine Streets, announces that the new term will open Monday, September 23, and that entrance examinations will be held Thursday, September 19. The special night course will open this year on September 30.



AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

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"Circulated Everywhere Dyestuffs are Used"

Vol. 3

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No. 11

PLEASE PAGE SHERLOCK HOLMES!

Baffling Mystery of French Government's Behavior Toward German
Dye Works Calls for Services of Holmes or the Infallible Dupin

WITH a large number of the civilized nations of the world scheming to overthrow the former dye monopoly enjoyed by Germany, the stories of progress made by each of these many units make most interesting reading for the balance of the workers, and furnish prolific sources of alternately commendatory and derogatory—but in the main highly entertaining—comment in the trade press. We have, in the past, been kept pretty well posted as to the progress made by the various nations as, step by step, they have advanced themselves nearer to that day when the German pretensions to wizardry in the production of synthetic colors shall stand exposed to the world for the hollow sham that it is—that is to say, we have been kept pretty well posted as to the progress of all the nations with the exception of France.

News of this country's activities in this direction has not come to these shores as rapidly as one could wish. For one thing, it is only natural that there would be less news to give, for a man engaged in a desperate struggle to tear himself away from the clutches of a giant squid which has fastened its loathsome tentacles about his body will not pause to wonder how that new suit he ordered last week is going to fit him.

For us, "three thousand miles away," and even for England, it is hard to experience just the same feelings which France is experiencing; there is all the difference between watching the progress of a fight, in which your sons are engaged, taking place across the street, and in having this same fight taking place all over your front porch and in your parlor. In the first place, one can continue the preparation of a hearty dinner for the returning combatants, while in the second, one is too busy dodging things to make a pronounced success of anything requiring so much skill and finesse. Hence, France has made actually less progress than any of the others, and there is a dearth of news from our Gallic colleagues which greatly enhances the interest in whatever brief reports do succeed in reaching us. And, viewed in this light, the latest word from France becomes all the more astonishing.

Of all the nations now independently working out their coal-tar chemical destinies, which include our own country, England, Italy, Japan and Sweden, not one has suffered anything like as much at the hands of the Hun as has this self-same France.

The record of German crimes within the borders of that brave but unhappy

country is, as everyone well knows, something to make the blood run cold—and then boil over! France has every reason which her Allies have for wishing the military and industrial overthrow of Germany, *plus* some additional reasons which only Belgium or Armenia can ever truly appreciate. Of the dye producing countries, France's personal hatred of all things German must of necessity be the most intense, and must average the nearest to 100 per cent among her population.

Is it not strange, then, that it is in France, the spirited; France the courageous and indomitable, France with a million bloody outrages to avenge and with a million insults to wipe out—in France, of all nations—that we should find the greatest apparent toleration of potential German industrial strongholds on her own soil, and the least apparent disposition to treat these possible rivals as they so richly deserve at her hands, and as all the other allied nations—with even less cause—are treating them?

But it is even so. The situation, as revealed by recent reports, is substantially as follows:

There are located on French soil, at the cities of Lyons and Creil, three large German dye works which were running full blast before the war under German management, but which since 1914 have been officially "sequestered" by the French Government, and have since produced nothing more useful than a vast deal of venomous verbosity as to their ultimate disposition.

France at present possesses seven companies for the production of synthetic colors, and any number of brilliant chemists, all eager to win commercial independence and occupy their rightful place in the French dye markets. Chief among these firms is the

Compagnie Nationale de Matieres Colorantes, which is equipped with a capital of 40,000,000 francs and is aided by the French Government, although operating as an independent concern. All of these have expressed themselves to the effect that they regard the presence of the German dye works in France as a menace to the future of the industry, and are clamoring for the German works to begin making French dyes *instantanè*.

Yet, although the Compagnie Nationale was organized for the express purpose of ending the Teutonic dye monopoly, the French Government refuses to allow it to take over the works at Lyons and Creil, and this is rightfully regarded by the Gallic manufacturers as a needless official stumbling block and as a serious setback to their progress.

In explaining its attitude, the Government reveals the fact that it defines the term "sequestration" entirely to the benefit of Germany. As the President of France interprets it, sequestration of alien property must not mean spoliation, but, instead, conservation of the property. The sequestrator, he holds, becomes the keeper of a pantechnicon, and must eventually deliver the sequestered goods intact to the original holders. He naively adds that therefore the German color works must not be turned over to French manufacturers because in this way German trade secrets would fall into their hands, and the pantechnicon "would be damaged to that extent"!

Ye gods! The French are famous for their politeness the world over, and their gallantry toward a foe is traditional, but we are sure that Alphonse and Gaston in their palmiest days never perpetrated anything quite so quixotic in the line of perverted punctiliousness as this! And yet, withal, there is something characteristically French about the proceeding which proves that the spirit of Richard Coeur de Lion still lives in his descendants. And while we cannot but take issue with the decision and hope for its speedy reversal, we must confess to an unbounded ad-

miration for the qualities of a race which prompted a course of action so needlessly knightly. It is much akin to the conduct of the man who was "so straight that he bent over backwards"!

We are quite at a loss to account for the line of reasoning of the French Government in this matter save on the grounds indicated above. This, perhaps, is the true explanation—that it springs from an instinct of the French which is quite unquenchable—but leaving it aside for the present, there are only two other conclusions left. One we hold to be impossible, and the other totally unbelievable. They are furnished by a commentator who attributes the stand taken to "timidity or political perversity of the French Government," and hints darkly that there may be some political influences at work which are adverse to the *Compagnie Nationale*. Well, of this we are sure: that the French Government, of which Premier Clemenceau, with his well-earned sobriquet "The Tiger," is a typical exponent, is utterly without such a thing as timidity anywhere in its make-up. Nor does it seem possible that the complete adjournment of politics can be confined solely to this country.

It may be that the French Government, burdened as it is with more weighty considerations than it has been called upon to face since the days of The Terror, does not realize fully the true situation with regard to German post-bellum competition, whereas we, being further away from grim actualities, are enabled thereby to gain a better perspective. But certainly this attitude is as puzzling to French chemists and manufacturers as it is to us, and it would really seem to call for the services of our old friend, Sherlock Holmes, or, more appropriately, those of the infallible Dupin, in order to clear it up. Perhaps some of our readers with a more intimate knowledge of conditions in France can provide the true explanation. If so, we should be glad to hear from them. We give it up.

The National Aniline & Chemical Company, Edgewood Arsenal, N. Y., has awarded a contract for the construction of a one-story, 40 x 52, 80 x 80 reinforced concrete, brick and steel plant, at Buffalo River, that State. The estimated cost of the new structure will be \$75,000. At the same time plans have also been filed by this company for the erection of a two-story reinforced concrete plant, about 105 x 196, to be used as an addition to its present works at Marcus Hook, Pa. This addition will cost in the neighborhood of \$110,000, it is estimated.

Announcement has been made by the Empire Chemical Company, Jersey Avenue, New Brunswick, N. J., that the capital of this concern has been increased from \$200,000 to \$300,000, to provide for expansion.

To manufacture dyes and chemicals, the Yankee Chemical Company has been incorporated with a capital of \$25,000 under the laws of Illinois. The headquarters of the concern are at Chicago.

SOME NOTES ON UNION DYE- ING

BY C. M. WHITAKER, B.Sc.

The present shortage of wool, coupled with the restrictions on its use consequent thereon; is having a revolutionary effect on the textile industries of Great Britain. In order to make the most of the wool available, much ingenuity is being expended on making union cloths by manufacturers who would never have handled mixed fabrics had this shortage of wool not occurred. The natural sequence is that many dyers are now being called upon to dye mixed fabrics who have hitherto never handled them. A few notes on the dyeing of mixed fabrics with some of the dyestuffs available at the present time will not, therefore, be out of place.

THE QUICKEST METHOD

The quickest method of dyeing mixed fabrics is the single bath method, with the help of suitable direct cotton colors and acid colors which have a good affinity for wool and silk in a neutral bath. Very good results may be obtained if the influence of the following factors is recognized:

1. Structure and nature of materials in the cloth being dyed.
2. Amount of liquor employed in proportion to weight of cloth.
3. Control of temperature.
4. Correct choice of dyestuffs.

STRUCTURE AND NATURE

1. The golden rule in union dyeing is that the cotton must be darker than the wool, otherwise the cotton shows up too prominently—what the trade terms "stares." The structure of the cloth plays a very important part in determining the degree of exactitude with which the cotton must be matched to the wool. If the cotton is well buried, as in a cotton fabric, one need not be par-

ticular about the shade of the cotton, so long as it is reasonably covered. If one is, on the other hand, dealing with a cotton warp and woollen weft serge, then it is absolutely essential for the wool and the cotton to be of the same shade, with the cotton the heavier of the two. The structure of mixed hosiery fabrics plays a very important part in the results obtained. A combination of colors which will give a solid shade on one hosiery fabric does not necessarily give as good a result on another quality of hosiery fabric, though dyed under identically the same conditions. Again, a cotton warp gabardine with a botany weft naturally requires different treatment to a mohair pile fabric with a cotton back. Skilled judgment and wide experience, both of fabrics and dyestuffs, are demanded of the successful union dyer.

AMOUNT OF LIQUOR

2. In the single bath method of union dyeing the dyebath is rarely exhausted, except in pale shades, because neither direct cotton colors nor neutral dyeing acid colors have sufficient affinity for the fibre to dye clean out of a neutral bath. Under these circumstances the proportion of liquor used to weight of material plays an important part in the economy of dyestuffs. It follows, therefore, that the less liquor used, the fuller the shade obtained from the same weight of dyestuff. It is, of course, false economy to reduce the volume of liquor so that there is not sufficient room in which to manipulate the cloth efficiently, with uneven results as a consequence. The expense of correcting an uneven piece will easily outweigh the saving of the dyestuff effected. The volume of liquor should, however, be kept as small as possible consistent with good results.

CONTROL OF TEMPERATURE

3. The proper regulation of the temperature of the dyebath is probably the most important factor in successful union dyeing. The following axiom indicates the general principle to be followed in the regulation of temperature. At low temperatures the dyestuff goes more on to the cotton, whilst at high

temperatures the dyestuff goes more on to the wool. It follows, therefore, that there is a mean temperature at which the wool and cotton will be practically solid when dyed with those dyestuffs which give solid shades. There is an exception to this rule when dyeing light shades with direct cotton dyestuffs. A dyestuff of this class which will give a solid shade at 3 per cent will not give a solid shade at $\frac{1}{4}$ per cent. In a light shade the bath may be vigorously boiled and still the dyestuff will dye the cotton much heavier than the wool. In these cases the wool must be brought to shade by means of acid dyestuffs which have a good affinity for wool in a neutral dyebath. In the list of dyestuffs suitable for solid shades, the best temperature is given for each individual dyestuff which is suitable for giving a solid shade. It must, of course, be borne in mind that structure of cloth also plays a part in the temperature to be employed. Naturally a hard-twisted, cross-bred wool will require a lower temperature than a solid, loose-spun botany wool. The skill and experience of the dyer is required to form a correct judgment on this point.

CORRECT CHOICE OF DYESTUFFS

4. Good results in union dyeing are naturally unobtainable unless a correct choice of dyestuffs is made. Three classes of dyestuffs are available for the single-bath method of dyeing mixed fabrics:

(a) Colors which dye practically a solid shade on mixed fabrics at suitable temperatures.

(b) Direct cotton colors which dye the cotton heavier than the wool even at high temperatures, and so may be used for shading the cotton when necessary.

(c) Acid colors which have a good affinity for wool in a neutral bath and so may be used for shading the wool if necessary.

A COLOR LIST

In the following lists, colors suitable for the dyeing of mixed fabrics are graded into the above three classes, which will be of assistance to the dyer in choosing the correct dyestuffs.

Colors which dye practically solid shades:

Benzopurpurine 4B, 195 deg. Fahr.
 Chlorazol Black E, extra, 195 deg. Fahr.
 Chlorazol Brown GR, 195 deg. Fahr.
 Chlorazol Brown HX, 185 to 195 deg. Fahr.
 Chlorazol Dark Green PL, 175 deg. Fahr.
 Chlorazol Green B, 195 deg. Fahr.
 Chlorazol Orange R, extra, 185 to 195 deg. Fahr.
 Union Black 80379, 195 deg. Fahr.
 Union Green BD, 195 deg. Fahr.
 Union Navy 81324, 175 to 185 deg. Fahr.
 Union Nigger Brown BD, 185 deg. Fahr.
 Union Red BD, 195 deg. Fahr.
 Union Saxe Blue BD, 195 deg. Fahr.
 Union Violet BD, 175 to 185 deg. Fahr.
 Union Yellow BD, 195 deg. Fahr.
 Direct Cotton Colors which dye the cotton heavier than the wool:
 Afghan Yellow GX, R.
 Chlorazol Fast Yellow NX.
 Chlorazol Blue B.

(Continued on page 12)

AMERICAN DYESTUFF REPORTER

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A. P. HOWES, Editor and Publisher

THE SAMPLE NUISANCE

Dyestuff dealers and manufacturers waste thousands of dollars a year in samples which are never tested. One of the methods used by the average buyer of dyestuffs to get rid of a persistent salesman is to tell him to send samples of certain dyestuffs. When they arrive, they are either thrown away or saved for future use.

We do not believe that there is any disposition on the part of the users of dyestuffs to actually profit by the samples they receive. Nevertheless, there are a number of smaller dyers who do use samples thus obtained.

One of the largest print houses in this country always returns samples when they are not sufficiently interested in the dyestuff submitted to make a test. If all of the consumers in the country were to institute this method, it would result in a big saving to the dealers and manufacturers of dyestuffs and would create a much better feeling all around.

It would seem as if it were no more than courtesy to acknowledge receipt of samples, and, if they are tested, to give the results of the test. This cannot possibly do the dyer any harm, and it would be vastly to his advantage if he only would stop to think about the matter.

If, for instance, a dealer submits samples of a certain color and they fail to please, either through not being the correct shade or strength, this information would be of great value in submitting future samples, and would give the dealer or manufacturer a better opportunity to meet the requirements of the dyer.

If consumers generally would make up their minds not to ask for samples of dyestuffs which they do not require, to return those which they receive in which they are not interested, and to make a report on those which they do test, it would certainly lighten the burdens of the dealer and the manufacturer and would save an unnecessary expense which, in the aggregate, runs into very large figures and which is ultimately borne by the consumer himself as part of the cost of doing business. Moreover, such a policy would be distinctly in keeping with the national campaign for the avoidance of waste, and would result in a very considerable conservation of dyestuffs.

AN APPRECIATION

On another page in this issue will be found an advertisement of the Seydel Manufacturing Company, the caption of which reads: "We urge that the Textile Industry support the stand of the AMERICAN DYESTUFF REPORTER for an American Dyestuff Industry."

It is peculiarly gratifying to the publisher to feel that our efforts in behalf of the American dyestuff industry, and particularly the propaganda which we have conducted looking toward the permanent elimination of the German influence in dyestuff circles, has been sufficiently appreciated to warrant a manufacturer in spending money in our columns to tell others of his sympathy with our endeavors.

In this same connection it is most gratifying for us to report a very large response to our circular letters soliciting subscriptions to the REPORTER. We are confident that the textile industry is whole-heartedly behind our efforts, and we wish gratefully to acknowledge the evidences of their support which we have received. Those among our readers who have not as yet sent in subscriptions will find a coupon at the bottom of page 18. We earnestly request that they put themselves on record as endorsing our efforts by signing and returning same to us.

NOTES ON UNION DYEING

(Continued from page 9)

Chlorazol Sky Blue FFS.

Chlorazol Violet WBX.

Acid colors which have a good affinity for Wool in a neutral dyebath:

Bordeaux B.

Cardinal Red J.

Citronine R.

Naphthalene Black 12B, D.

Neutral Wool Navy 79625.

Orange G, IV.

THE TWO METHODS

There are two methods employed in practice, the second method being frequently used by garment dyers:

1. Enter cold, raise to the temperature recommended in half an hour, dye at this temperature for half an hour, shut off steam, and allow to feed in the cooling bath half an hour.

2. Enter at the temperature recommended, work twenty to thirty minutes at this temperature, shut off steam, and work half an hour in the cooling bath.

Both the above methods are used, but the author prefers the former, owing to the fact that the cotton gets well covered before the wool begins to take up the color. No hard-and-fast rule can be laid down as to the length of time to keep the bath simmering. This must be left to the judgment of the individual dyer, since so much depends upon the nature of the wool, also the twist of the yarn, the weave and design of the material. In general practice, however, it may be laid down that vigorous boiling is rarely required, because the wool will usually take the color to the desired extent at the spring boil.

ASSISTANTS

The assistants used in the single bath process are Glauber's salt, common salt and occasionally soda ash. Many dyers prefer to use common salt to Glauber's salt, because they claim the former does not soften the goods like the latter. This has been shown by experiment to be due to the fact that a solution of Glauber's salt becomes alkaline on boiling, but becomes neutral again on cooling, whilst a hot solution of common salt remains neutral. Ten to 40 per cent Glauber's salt or 10 to 25 per cent common salt calculated on the weight of the material should be used according to the depth of shade being dyed. Soda ash has the effect of restraining the color from going on to wool too quickly. Its use is advisable when dyeing shoddy which has been stripped with the help of acid. If the goods have by mischance not been perfectly neutralized after stripping, the addition of 1 to 2 per cent of soda ash prevents the dyebath becoming acid; if the dye liquor became acid the color would go on to the wool to the detriment of the cotton.

BLACK FAST TO MILLING ON UNION WASTE, ETC.

Chlorazol Black E Extra will be found quite useful for dyeing a black on angora yarns, mixed waste, etc., fast to milling. If the dyed material is after-treated in a fresh bath for half an hour at 140 deg. Fahr (60 deg. C.) with 3 per cent formaldehyde (40 per cent solution), the fastness to milling of the black against white cotton is considerably improved.

THE TWO-BATH METHOD

This method of dyeing the wool and cotton in separate baths has two great advantages over the single bath method, viz.:

1. Very much faster shades on the wool may be dyed by this method than by the single bath method, owing to the fact that both mordant and acid dye-stuffs may be used.

2. Much brighter shades may be obtained since any wool dyestuff may be used, whereas the choice of wool dye-stuff for the single bath method is very strictly limited.

The cotton may either be dyed before the fabric is woven with colors which will withstand boiling with acids, such as sulphur or developed dyestuffs, or it may be dyed in the washing machine after the wool has been dyed. This may be done with sumac and iron in the case of blacks and navies, or in the cloths in which the cotton is well covered so that it merely requires to be dyed irrespective of being a match to the wool. The alternative process is to dye the cotton with direct cotton colors which have a good affinity for cotton at low temperatures, coupled with the fact that they do not stain the wool. The following colors will be found most suitable for this purpose and for burl dyeing, viz.:

Afghan Yellow GX, R.

Chlorazol Black E extra for Burl Dyeing.

Chlorazol Blue B.

Chlorazol Brown HX.

Chlorazol Dark Green PL.

Chlorazol Fast Yellow FG.

Chlorazol Orange R extra NX.

Chlorazol Violet WBX.

The above colors may be applied on the milling machine along with the soap or on the washing machine. In the latter case use as assistants 1 pound Glauber's salt or common salt and 2 ounces soda ash per 10 gallons liquor employed. The smaller the amount of liquor employed the fuller the result from the same weight of color. The use of soda ash increases the affinity of the dye-stuff for the cotton whilst decreasing the affinity for the wool. The wool will be left the cleaner if the dyestuffs are applied cold, but better value will be obtained if the temperature is raised to 100 deg. Fahr. (40 deg. C.). Omit the soda ash and use common salt when

dyeing with Afghan Yellow. The affinity of the above colors in the soap bath varies considerably. It will be found that Chlorazol Fast Yellows FG and NX and Afghan Yellows GX and R have a poor affinity in the soap baths, but quite good when used with the addition of salt. Chlorazol Black E Extra for burl dyeing, Chlorazol Blue B and Chlorazol Violet WBX are good under both conditions.—*The Dyer and Calico Printer.*

Producers of khaki extract in Japan have temporarily ceased manufacturing this commodity, it is said, in order to strengthen the market, which has fallen off considerably, due to overproduction.

The well-known firm of Ault & Wiborg recently suffered a loss when fire of undetermined origin destroyed one of the new frame buildings of their plant at St. Bernard, Ohio. The extent of the damage has not been made public.

DYESTUFFS

By DR. LOUIS J. MATOS

We give herewith the fourth and last installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute*, and which, for the benefit of our readers, we are reproducing in four parts.

PART IV

In the ordinary course of dye manufacturing as carried out in the large color works abroad or in the more important dye manufacturing plants in this country, the work is divided about as follows:

First. *Research Chemists*.—These are men with university training. As a rule they enter the dye works under rather humble conditions until they "find" themselves. Generally they specialize in one and sometimes in two groups of colors, and it is seldom that they depart from the confines of their chosen specialty. It is they who experiment and work out what may ultimately appear on the market as a new dye. Their compensation is rather low; lower than men holding corresponding degrees from American universities. Their ambition is to make discoveries that will yield them royalties on account of their discoveries being good sellers. When a man has made a few discoveries and his dyes are on the market his income in the form of salary and royalties gradually increases and he becomes more or less a fixture in the research department. Ample evidence of this is to be found by carefully inspecting the names of patentees of dyes during the last three years, when we find that the same name occurs at various intervals, and, except in a few instances, is connected always with the same firm.

Second. *Factory Chemists*.—These men are also university graduates, but

for one reason or another are less adapted to research work, or do not care for the restraint incident to chemical research. It is they who take up the work where the research chemists leave off. They adapt the chemical discoveries and reactions to factory conditions, and in most instances are the dye production supervisors; they are not foremen. Some of them may have under them two or three departments, for which they are responsible. As a rule, it is from the ranks of these chemists that the superintendents or technical directors are obtained.

Third. *Chemical Engineers*.—Owing to their particular training and abilities, these men are responsible for the particular design and installation of the necessary machinery required for manufacturing the various dyes as the results are obtained from both the research chemists and the factory chemists. As a general rule, after the identity of the dye has been proven by the research chemist and after the factory chemist has worked out satisfactorily the sequence of the several operations necessary, even to the production of batches of fifty to one hundred pounds, or even more, and the dye has been demonstrated to be a promising one, it is then that the chemical engineer steps in and designs the plant for its commercial production upon a full factory scale.

Fourth. *The Engineers*.—The engineer department of a dye manufacturing plant goes beyond the corps of chemical engineers, although in some instances these departments may overlap. The engineers, of necessity, are more familiar with the construction of the individual units comprising the plant than the chemical engineers. It is the engineer department that takes care of the construction of the elements of the plant called for by the chemical engineer and factory chemist, and whose advice and assistance is at all times encouraged when necessity requires.

One thing is to be constantly kept in mind, however, regarding the so-called efficiency of German dye plants, and that is the utmost care taken by the

management to prevent undue intercourse and familiarity between those who comprise the several main departments. There seems to be, in fact there is, a sharp line of demarcation which keeps the various professional groups sharply separated. Unlike the prevailing custom in well-managed American plants, there are seldom, if any, general conferences that have to do with increasing the proficiency of the various departments. In most of the larger German color works there is rather a dense atmosphere of association difficult to penetrate and the existence of which only tends to retard rather than advance the particularly high degree of professionalism. This may be contrary to many preconceived notions gained by the American public, but it is a fact, nevertheless.

In dye establishments, distributing plants and similar commercial enterprises, the technical staff may be conveniently divided into two broad groups as follows:

(1) *Textile Chemists*, who specialize more or less in wool, cotton, silk, union goods, etc.—In some of the larger establishments men to fill these positions have been selected from the ranks of the salesmen who may have had previous mill experience, or from graduates of the various textile schools.

(2) *Dye Laboratory Chemists*.—These are usually boys or young men who entertain the idea that they are chemists, but whose preliminary education combined with lack of chemical training enables them to discharge the duties only of dyer on a miniature

scale and consequently they become standardizers or simply shade matchers. These young men become very expert in compounding the dyes of the firm for which they worked and in matching the colors of the firm's competitors. Generally it may be regarded as a mistake for a young man with chemical ambition to lose himself in a standardizing or shade-matching laboratory of a dyestuff house. There is little or no chemical work to be performed, and any knowledge that he may have upon this subject will certainly become stale, since no opportunity is afforded for him to exercise his chemical skill. Except in very few instances have such men ever become valuable technical men in the broad sense of the word, that is, men who are competent to go out into the dye houses of the firm's customers and solve difficult problems in the practical application of dyes or to seek the cause of the trouble when, through one fault or another, the dyestuffs failed to do their work properly.

It is here that I believe many of our textile schools make the mistake of not suggesting to their dyeing students that they should take up the study of dyeing along some one restricted line and specialize in that. For example, wool. It is manifestly impossible for a man who is a wool dyer to be at the same time a skilled cotton dyer or a skilled silk dyer. I mention these points in order to direct your attention to the circumstances surrounding the employment of chemists in the dyestuff industry. It is an industry that offers remarkable opportunity for experimental

work for young men to take up this particular field, but in order to do it to their own satisfaction and that of their employer, it is necessary that they should give serious consideration to the labors required of them and the amount of knowledge necessary for them to discharge their duties satisfactorily.

I have made mention of the employment of chemical engineers in the dye-manufacturing plants, but the satisfactory employment of a chemical engineer in the above organic chemical industry resolves itself again into some special branch of chemical work that the engineer has particularly studied.

Broadly, the color industry is divided into the production of: Raw materials, intermediates, dye making. Any one of these subdivisions is likely to include one or more of the following operations, each of which is generally complex and which should have the undivided attention of the engineer.

I refer to alkali fusions, which are generally preliminary operations.

Sulphonation, which involves the use of either artificial or fuming acids.

Nitration and Liming.—These are operations in which sulphonations are generally decomposed.

Filtration.—Where solids are separated from liquids or *vice versa*. This is an art. It seems simple at first glance to have a solution with insoluble matter suspended in it or a sludge of greater or lesser density requiring filtration, but it is at its best a problem requiring a great deal of thought, time and attention to be able to successfully filter a given liquid from a solid or a solid from a liquid. There are so many conditions of density that only long experience can point the way successfully.

It is to be regretted that more young men in our chemical engineering courses have not devoted more time and attention to this particular branch of chemical engineering. Little has been published upon it, and the information that has been gained by those who have worked upon filtering problems is generally not divulged.

Drying is another chemical engineering subject that is of the utmost importance, since it occurs so frequently in many phases of dye making, from raw materials to finished dyes. I may mention particularly the production of certain of the Amidonaphthol sulphonic acids and disulphonic acids, where both the filtering and the drying determine almost exclusively the value of the finished product. Some of those products depend more upon the skill of the engineer than upon the skill of the chemist.

I could name in succession a number of other important operations, all of which contribute to the successful production of the finished article, and each of which requires that the man in charge—the directing genius, if I may use that term—should be equipped and trained to take care of that particular phase of the work.

Referring again to the amidonaphthol sulphonic acids, I may mention that with the exception of one plant—and that one located in France—no single chemist has been able to successfully carry out every single operation from the conversion of the naphthalene in the first instance to the grinding and

sieving of the finished product. This may appear to be a strong statement, but if we consider that to produce these finished products almost every operation previously referred to is involved, it is safe to say that no one industrial chemist or chemical engineer is sufficiently familiar with the innermost details to permit him to successfully direct the work upon every stage in the chain of processes.

[THE END]

SULPHUR DYESTUFFS FROM VEGETABLE MATERIALS

Z. Suzuke, of Los Angeles, Cal. (Amer. Pat. 1,244,795), describes a process for securing a fast sulphur brown from rice hulls. They are dissolved in caustic alkali and the solution is then heated with sodium sulphide and sulphur until the reaction is complete. The product is evaporated to dryness and is then ready for use on cotton goods. Modifications of the shade are obtained by adding at the beginning the bran of rice or various cereals or buckwheat hulls.

In another patent of the same date (Amer. Pat. 1,244,796) the same inventor makes use of tobacco stems in a similar manner. The color obtained is likewise a dark brown, and can be modified to some extent by adding at the beginning rice or white straw. It is to be noted in this connection that several patents have been issued during recent years for the manufacture of sulphur colors from carbohydrates and similar vegetable material. All yield brown dyes.

A NEW DYEING MACHINE

Henry Higgs, of Amsterdam, N. Y., describes (Amer. Pat. 1,229,612, assigned to the Klauder-Weldon Dyeing Machine Co., of Amsterdam.) a machine for use in both washing and dyeing which is of a somewhat complex nature but which, nevertheless, materially heightens the uniformity of the work and the rapidity of the operation.

Essentially, the machine consists of a rotary chamber composed of several compartments adapted to contain textile materials. These compartments are formed by longitudinal concave-convex walls (the concavity of one wall facing the convexity of an adjacent wall), traverse end walls and peripheral walls. The machine is placed in a vat provided with the necessary gear and transmission to cause rotation, and is continuously submerged while this rotation is taking place. The walls referred to consist largely of perforated plates or wire gauze. The peculiar construction, better understood by a study of detailed drawings, is such as to give to materials placed in the various compartments a rolling, or epicyclic, movement. It is claimed that this favors the penetration of the textile fabrics by the dye liquors at every angle.

The process for producing dyestuffs from weeds, originated by William Ficker, will be exploited by the newly incorporated Southern Chemical and Dye Co., which has been authorized at New Orleans with a capital of \$150,000.

NOTES OF THE TRADE

Claiming that a shipment of dyes en route from Tien-Tsin, China, to New York City, via San Francisco, had been tampered with to such an extent that they were delivered in an unsalable condition, the Sino-American Trading Corporation has entered suit against the Delaware, Lackawanna & Western Railroad for \$7,333.

The well-known firm of L. B. Holliday & Co., England, will in future be known as L. B. Holliday & Co., Ltd., this concern having been formed into a limited company with a nominal capital of \$1,250,000, of which over \$1,000,000 has already been subscribed.

With a capital of \$50,000, the New England Chemical Company has been incorporated under the laws of Massachusetts to manufacture, export and generally deal in dyestuffs and chemicals. The incorporators are Grosvenor Calkins, president and clerk; G. O. Mitchell, treasurer, and John C. Jones, Jr.

Plans have been filed and a contract awarded by the Dow Chemical Company, Midland, Mich., for the construction of a new two-story power plant in connection with its works at Merrill, that State.

H. Y. McBride, who recently claimed to have discovered a new method of scouring wool with dry chemical powders, thereby saving valuable by-products lost when the wet process is used, is reported to be negotiating for the establishment of a wool scouring plant at Artesia, N. M.

Having purchased the mill properties owned by Dwight Ashley at Paterson, N. J., the Washington Piece Dyeing Company, a comparatively new concern, is building an addition to the works which is expected to be ready for the establishment of a piece dyeing business therein very shortly.

The first independent attempt by a Colombian textile mill to do its own dyeing on Colombian cotton has been made by the Fabrica de Tejidos Obregon, located at Barranquilla, Colombia, where dyeing machinery has recently been installed. Heretofore the firm has used only sulphur black, but will in future attempt other shades.

Judge Hendrick, of the Supreme Court, has upheld the Swiss Colours Co. in its verdict for \$2,500 against the Jefferson Manufacturing Co. The defendants claimed that goods were not up to samples, but the court ruled that delivery had been accepted.

With a capital of \$500, the Producers Chemical Corporation, New York, has been incorporated under the laws of that state to manufacture dyes. Incorporators are John J. Smart, George Lebers and John H. Allen.

The Georgette Silk Corporation, of New York City, has increased its capital from \$30,000 to \$99,000.



AMERICAN DYESTUFF REPORTER

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Manufacturers will Exhibit

American Dyestuffs in the Far East

By Paul Nobbe

New Mineral Dyestuffs

AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, September 16, 1918

No. 12

THE CHEMICAL EXPOSITION

The Event This Year Should Furnish
a Special Appeal to Dye Fraternity

THE stage is set. Final arrangements for the "big show"—the Fourth National Exposition of Chemical Industries—are practically completed, and when the doors of the Grand Central Palace swing open at 12 o'clock next Monday, September 23, all will be in readiness to demonstrate the amazing progress wrought by our industrial chemists, makers of equipment and manufacturers during the past year.

For those connected with or interested in the dyestuff industry the exposition will bear a peculiar significance more impelling, perhaps, than to any other single field, for in the four years of achievement, during which we have been steadily wresting away the "secrets" of the German chemists, the dyestuff industry has occupied a unique position.

A novel feature of the exhibits which should greatly enhance their interest for members of the dye fraternity will be the official "bull's-eye" which the management proposes to place on all chemical products (not machinery) which owe their manufacture by American chemists on American soil to the cataclysm which closed the markets of this country to German manufacturers.

Since its inception the exposition has sought to accomplish one thing above all others, namely, to call attention to products manufactured for the first time in this country during the war period.

In the past no distinguishing mark was given to such products, with the result that the layman, and likewise even those connected with the industry, could not, in many cases, without special inquiry, determine quickly and easily the actual progress made from year to year. We are sure that the large number of exhibits bearing the "bull's-eye" among the booths of the dye manufacturing companies will be extremely gratifying to those "of the cloth" and to the layman a veritable revelation.

While it is estimated that 25,000 chemists from all parts of the United States, Canada, South America, and from a number of our Allied countries in Europe, will be in New York to attend the exposition and the conventions held in connection with it, it must not be supposed that the event will be of interest to technical men only. Many last year, fearing this, remained away from the exposition until various friends apprised them of the myriad things to be seen which were calculated to catch the fancy of the layman. Indeed, it was the

fundamental aim of the managers to make the exposition an educational affair, and that they succeeded in this was amply attested by the large attendance of school children, students, and even persons engaged in occupations utterly unrelated to anything shown in the booths of the exhibitors.

Although owing to the wide publicity which the report that the Government was about to take over the Grand Central Palace for war work received in the press, the impression became current that the show would not be held this year; it will, however, take place exactly as scheduled, as announced in the REPORTER last week. But it will be the last exhibition of any kind to be held in the structure on Lexington Avenue until after the war. The hours, instead of being from 11 o'clock a. m. to 11 o'clock p. m., as was the case last year, will be from noon until 10.30 o'clock p. m.

More than 350 exhibits, representing every field of industrial chemistry and chemical manufacture, will be displayed and demonstrated. Prominent men in chemical and industrial plants, in colleges and industrial schools, in Government and civilian work have been marshalled for this exposition, which will take on the appearance of a great college and workroom for the interchange of ideas.

In view of the present international situation regarding chemical industries in general and their rapid growth in the United States during the period of the European war in particular, the exposition has a message to deliver emphasizing the opportunity which is now being presented to the American manufacturer: Necessity has spurred on many chemists, and just how far they have succeeded may be judged by the exhibits at the exposition. The Amer-

ican chemist has come to the front and has shattered in four years the "line" of the German chemist which had been building for more than forty years. In other words, the camouflaged "veil of mystery" of the German chemists has been lifted by the American chemists, whose discoveries or "secrets," as the Germans called them, are not locked in the brain of one man, but given to others for the betterment of the industry. At the exposition—this getting together of science and industry with timely addresses and motion pictures—the exchange of ideas will benefit all who attend, and its influence in bettering and increasing the national production will be strongly felt.

While the exposition will bring manufacturers of machinery, equipment, products and supplies together with men who are using them, its chief effect will be to show the people of the country that the chemists of America have made rapid advances the past year, greater than ever before in this country's history. The convention will bring to light some of the marvelous results of recent research, and many engineers and experts who hold important positions in the advance of the chemical industry will be speakers.

The advisory committee of the exposition is composed of Charles H. Herty, chairman; Raymond F. Bacon, L. H. Baekeland, Ellwood Hendrick, Henry B. Faber, Bernard C. Hesse, A. D. Little, W. H. Nichols, R. P. Perry, H. C. Parmelee, G. W. Thompson, F. J. Tone, T. B. Wagner and M. C. Whitaker. Charles F. Roth and F. W. Payne are the managers. Dr. Bacon, of this committee, is now head of the Chemical Warfare Section of the National Army and a member of General Pershing's staff.

Some sections of the South again are sending exhibits, and Canada is taking the opportunity of presenting the materials it has available for development by the chemist and financier. Technical and business men over the country should give heed to these exhibits since they will show how they can meet the war-time need. A section for the glass and ceramic industry has been added

with which the American Ceramic Society is co-operating.

Papers covering practically every phase of chemistry and a discussion of steps that will need to be taken after the war will be presented by leading experts in each branch. Pressing chemical problems concerning many of the chief articles of domestic and foreign commerce will be taken up during the convention, and it is expected these discussions will have an important bearing on the future manufacture of materials that have been scarce and high-priced ever since the curtailment of American commerce with Germany and other European countries.

GENERAL PROGRAM

An elaborate and important program has been arranged for the week, as follows:

MONDAY, Opening Day—Opening addresses to be made during the afternoon by C. H. Herty, chairman of the advisory committee; William H. Nichols, president American Chemical Society; F. J. Tone, president American Electrochemical Society; G. W. Thompson, president American Institute of Chemical Engineers. There will be symposiums on "The Development of Chemical Industries in the United States, Notably Since July, 1914." Evening—Motion pictures. Water Power, Its Development and Use: "The Falls of Iguazu, Argentine"; Great Latent Powers: "Power of Wealth—Hydraulic Development"; "Power Transmission: Canadian Shawinigan Falls Power Development and Its Surrounding Chemical Industries" (Shawinigan Water & Power Company); "Fixation of Atmospheric Nitrogen at Niagara Falls and Feeding the Soil with It" (American Cyanamid Company).

TUESDAY, September 24, Afternoon—Symposium: Acids and Chemical Engineering: E. J. Pranke, "Development of Nitric Acid Manufacture"; Emerson P. Poste, "Developments in the Manufacture of Glass Enamelled Apparatus." Evening—Motion pictures. The Oil Industries: "The Story of a Cake of Soap"; "Light from the Rocks—Natural Gas"; "Lake Asphalt Industry"; "Asphalt Roofing Industry";

"Asphalt Colloids" (Barber Asphalt Company). Speakers, 9 p. m.—J. A. Switzer, "Water Power Potentialities of East Tennessee"; Herbert C. Hene-gar, "Mineral Resources of East Tennessee" (representing Knoxville Chamber of Commerce).

WEDNESDAY, September 25, Afternoon—Symposium: Potash. C. A. Higgins, "Recovery of Potash from Kelp"; Linn Bradley, "Recovery of Potash from Iron Blast Furnaces and Cement Kilns by Electrical Precipitation"; John W. Hornsey, "Potash from Desert Lakes and Alunite"; Alfred de Rapp, Jr., "Potash from Searles Lake." Evening—Motion pictures. "Electrical Precipitation of Potash from Cement Dust" (Research Corporation); "Colloid Chemistry"; "The Operation of a By-products Coke Plant"; "Moving a Forest to France"; "The Story of Potash," illustrating the manufacture of potash from the brine of Searles Lake, Cal.; "From Coal Mine to Corn Field, the Production of Sulphate of Ammonia and Its Use in Agriculture" (the Barrett Company).

THURSDAY, September 26, Afternoon—Ceramics: American Ceramic Society Meeting. L. E. Barringer, "*Manufacture of Electrical Porcelain*" (illustrated motion pictures); A. W. Bleinginger, "*Recent Developments in the Ceramic Industries*"; H. Ries, "*American Clays*"; F. A. Whitaker, "*Manufacture of Stoneware*" (illustrated slides); J. B. Shaw, "*Fuel Conservation*"; S. C. Linberger, "*Carborundum Refractories*." These will be followed by motion pictures as designated for the evening program. Evening—Motion pictures—The Ceramic Industries: "Glass Making" (Corning Glass Company); "The Making of Cut Glass"; "Manufacture of Electrical Porcelain" (General Electric Company); "The Making of Pottery." 9 p. m.—Speakers: J. A. Switzer, "*Water Power Potentialities of East Tennessee*"; Herbert C. Henegar, "*Mineral Resources of East Tennessee*," representing Knoxville Chamber of Commerce.

FRIDAY, September 27, Afternoon—Symposium: Metal Industries: Leonard Waldo, "*Development of Magnesium Industry*"; Alcan Hirsch, "*Ferro-Cerium Pyrophoric Alloys*"; Theodore Swann, "*Ferro-Manganese*"; Joseph W. Richards, "*Ferro Alloys of Silicon, Tungsten, Uranium, Vanadium, Molybdenum and Titanium*." Evening—Motion pictures: Carelessness the Destruction of Life, Wealth and Resources. "Careless America" (Firestone-Universal); "The Crime of Carelessness"; "The Workman's Lesson"; "Keep Your Business Going" (General Fire Extinguisher Company); "Vaccines for Prevention of Disease."

SATURDAY, September 28, Afternoon—Symposium: Industrial Organic Chemistry. S. P. Sadtler, "*Industrial Organic Chemistry and Its Progress*";

C. A. Higgins, "*Kelp as a Source of Organic Solvents*"; George H. Tomlinson, "*Wood Waste as a Source of Ethyl Alcohol*." Evening—Motion pictures. "Manufacture of Zinc Oxide" (New Jersey Zinc Company); "Manufacture of Genuine Wrought Iron Pipe" (A. M. Byers Company); "From Log to Lumber" (Southern Pine Association); "The Wonderland of the Appalachians" (Clinchfield Railway). 9 p. m.—Speakers, J. A. Switzer, "*Water Power Potentialities of East Tennessee*"; Herbert C. Henegar, "*Mineral Resources of East Tennessee*" (representing Knoxville Chamber of Commerce).

To all readers of the AMERICAN DYESTUFF REPORTER we desire to extend a cordial invitation to visit us in Booth 466, located at the extreme rear of the third floor of the exposition (take elevator), close to the entrance to the motion picture and conference hall. We trust that many of our friends will take advantage of this opportunity to become better acquainted and can promise to all visitors a hearty welcome, together with what services or courtesies we may be able to render.

LIST OF DYE MANUFACTURERS WHO WILL EXHIBIT

For the convenience of those particularly interested, we append a list of manufacturers of dyestuffs and closely associated products who will have booths at the exposition. Further information as to the location of these booths, or complete programs of the exposition, can be obtained at the AMERICAN DYESTUFFS REPORTER booth. In next week's issue we will give a detailed account of the various dyestuff exhibits.

American Aniline Products, Inc.,

80 Fifth Avenue, New York.

Apex Chemical Co., Inc., The,
Pulitzer Building, New York.

Arnold, Hoffman & Co.,
61 Broadway, New York.

Barrett Co., The,
Whitehall Building, New York.

Bound Brook Chemical Co., The,
Bound Brook, N. J.

Butterworth-Judson Corporation, The,
61 Broadway, New York.

Campbell, John, & Co.,
75 Hudson Street, New York.

Chemical Co. of America, The,
28 Platt Street, New York.

Chromos Chemical Co., The,
Aeolian Bldg., 42nd St., New York.

Dow Chemical Co., The,
Midland, Mich.

Drackett & Sons, P. W.,
Cincinnati, Ohio.

Du Pont Dye Works,
Wilmington, Del.

Dye Products & Chemical Co., The,
200 Fifth Avenue, New York.

Edison International Corporation, The,
165 Broadway, New York.

General Chemical Co., The,
25 Broad Street, New York.

Hemingway, Inc., Frank,
115 Broadway, New York.

Heald & Co., John H.,
Lynchburg, Va.

Hellenic Chemical & Color Co., Inc.,
The,
1 Cedar Street, New York.

Imperial Color Works,
Glens Falls, N. Y.

Bachmeier & Co.,
438 West 37th Street, New York.

R. U. V. Co., The,
165 Broadway, New York.

Innis, Speiden & Co.,
46 Cliff Street, New York.

Wolf & Co., Jacques,
Passaic, N. J.

Kalbfleisch Corporation, The,
31 Union Square, New York.

Klipstein & Co., A.,
644 Greenwich Street, New York.

Marden, Orth & Hastings Corporation,
The,
61 Broadway, New York.

Metz & Co., Inc., H. A.,
122 Hudson Street, New York.

National Gum & Mica Co.,
11th Ave. and 59th St., New York.

National Aniline & Chemical Co., Inc.,
21 Burling Slip (foot of John St.)
New York.

Newport Chemical Works, The,
Passaic, N. J.

Sterling Color Co., The,
72 Front Street, New York.

Semet-Solvay Co., The,
Syracuse, N. Y.

Seydel Manufacturing Co., The,
86 Forrest Street, Jersey City, N. J.

Stamford Extract Co., The,
82 Wall Street, New York.

Stein, Hall & Co., Inc.,
61 Broadway, New York.

Takamine Laboratories, Inc., The,
120 Broadway, New York

Warner Chemical Co., The,
52 Vanderbilt Avenue, New York.

Williamsburg Chemical Co., The,
230 Morgan Avenue, Brooklyn, N. Y.

At an aggregate rental of about \$50,-
000, the New York Color & Chemical
Company has leased property at 98
John street and 17 Platt street, New
York City, for a term of years.

Announcement has been made that
the British American Chemical Com-
pany, New York, with a plant at Ridge-
wood, N. J., is now in the hands of
receivers. Newman Erb, of New York,
and former Governor James F. Fielder,
of New Jersey, have been appointed to
act for the Government.

AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated

A. P. HOWES, Editor and Publisher

NEW AMERICAN COLOR

There is no better example of the "Made in U. S. A." slogan than the American Color Card. In a few years this card has set a standard which has not merely attracted attention, but has aroused the honest admiration of the trade. Prior to the war the textile industry was wholly dependent upon Europe for its color inspiration. To-day the American textile manufacturer is not only dyeing his fabrics with American dyes, but he is getting his color suggestions from American Color Cards, which have not merely filled the gap during war conditions, but have gone beyond and met the color needs of the fabric market in a scientific and practical way hitherto unequalled.

The card carries, as usual, forty-four colors, thirty-four of which are entirely new and novelty shades; a few standard and past seasonal colors are included, owing to their promise of continued popularity. The blues predominate. Four families of three shades each cover a varied range of hue and are described most aptly by their names. Ether, Azure and Zenith are the most brilliant in tone. The greenish blues are well represented by those named after the Great Lakes—Huron, Michigan and Superior. Three blues quite individual in character are Larkspur, Jay and Kingfisher, and should prove a valued addition to the list. There are, however, three blue greys which, from a point of artistry, immediately catch the eye. These are the blues of the French army, so familiar to us these days, and their names—Poilu, Alpine and Blue Devil—make their individual appeal. To complete the list of blues,

those good old standards, Marine and Navy 2, make a practical climax.

Three soft, attractive greys are shown, bearing the names Gull, Crane and Pigeon. These should prove of distinct value to the dress goods trade, as it is expected that all shades of grey will hold a place of prominence in the spring season.

The brown family is not forgotten; in fact, there are three that are very much out of the ordinary; they are Titian, Rust and Henna, very smart colors, rich in the red brown qualities, and should make a strong appeal to the millinery trade. The reliable standard champagne is supplemented by two deeper shades, Doe and Deer. Three shades also of the brown family especially adaptable to the style tendencies are Parchment, Dust and Bark.

The purples shown this season are very good. The orchid family is described under the botanical names Vanda, Cattleya and Gigas. The deep violets are called Veronica, Bishop and Prelate. Two delicate yellows are shown by Buttercup and Dandelion, while Coral pink and Bermuda, of deeper hue, offer excellent examples of the pastel shades so effective for evening wear.

The rose shades are well chosen. Weigelia, the lightest in tone, followed by Carnation and Peony, are rich in coloring and should be looked on with favor by the cotton trade. Cherry and American Beauty, so well known as serviceable colors, complete the reds. There are but three greens, the lightest, Leek, followed by Verdure and Ivy, are all much softer than those offered on the last seasonal card.

A prominent dyestuff manufacturer pointed out recently that the principle of standardizing trade colors not only benefited the fabric manufacturer, but it likewise worked for the benefit of the dyestuff producer and the dyer, for the reason that it brought about a far closer color co-ordination between the three. Once a color is determined by the trade as a certain definite, well-defined shade, it automatically acts as a guide to dyestuff manufacturer and dyer.

(Continued on page 12)

It is noteworthy that prominent color chemists who have examined the card are of the opinion that all the shades indicated can be produced satisfactorily from American-made dyestuffs. A warning is issued by the Color Card Association, however, which reads:

"Users of this card will please note that shades on wool and silk which require a blue coloring matter cannot be dyed 'fast' at the date of issuing this card. A blue of good fastness is promised early in November, 1918. In February, 1919, it is expected that the fastest known blue will be on the market.

"Until these products are on the market care should be taken in using shades in which blue is a factor. The blue now on the market (sulphonated indigo) is not fast, and reputable dyestuff houses do not warrant it as fast. It will not stand any considerable exposure to light."

NEW MINERAL DYESTUFFS

M. Malcolmson and F. W. V. Fitzgerald have taken out a patent (Br. Pat. 111,095) for the manufacture of new dyestuffs and for new processes. Certain salts of metals are capable of reacting with other salts of minerals or metals to fix various shades on wool. When certain of these colors do not dye cotton the addition of sulphur enables various shades of color to be produced and fixed on the vegetable fiber.

The inventor, naturally, does not assert that he has discovered that mineral and metallic substances are of use in the production or fixing of colors, but claims to have invented a method of

treating certain substances of mineral or metallic origin in a novel manner, whereby the use of these substances for dyeing may be greatly extended and more economical.

BROWNS AND BLACKS

To obtain light, medium and deep shades of brown to black on woolen or fabric, at temperatures varying from 60 deg. to 180 deg. Fahr., a lead compound, such as lead oxide, carbonate, nitrate, acetate or sulphate of lead, is used in the proportion of from 2 per cent upwards of the weight of material to be dyed. After stirring this into the dye beck, a small proportion of caustic soda is added, from 1 per cent upwards, calculated upon the weight of the goods to be dyed.

When the caustic soda has dissolved the yarn or fabric is entered. If oxide or carbonate of lead has been used, the color will gradually develop after a few hours in the cold. By heating the dye beck to a temperature from 100 deg. to 180 deg. Fahr. (care being taken not to tender the goods by too high a temperature), the color can be developed in from twenty to thirty minutes.

If too deep a color is obtained, this may be rectified by passing the goods through a dilute sulphuric acid bath or by the addition of sulphuric acid to the dye beck. Nitric acid may be used in the place of sulphuric acid if a brighter yellowish color is desired. The addition of salt to the dye beck retards the development of the color.

Calcium hydrate may be used in the place of the hydrate of soda if desired. Since, however, this is converted into carbonate in the process of dyeing, caustic soda is preferred because the carbonate is soluble, whereas calcium carbonate is insoluble, and further, the

insoluble carbonate becomes entangled or embedded in the fiber. However, the formation of an insoluble carbonate, when calcium hydrate is added direct to the dye beck, can be prevented by the use of a small quantity of sal-ammoniac. This effects the formation of ammonium carbonate, which is volatile, and of soluble calcium chloride in the place of the insoluble carbonate.

The insoluble lead compounds can be mechanically mixed with sodium carbonate and calcium oxide, in various proportions, this mixture yielding a dyestuff capable of giving a good direct brown to woolen when used alone. Three parts of an insoluble lead compound, such as litharge, mixed with four parts of calcium oxide and six parts of sodium carbonate (the whole being thoroughly ground down and mixed together) makes a good mixture. From 1 per cent upwards of this mixture, calculated upon the quantity of wool to be dyed, may be used to give a brown to woolen.

Good results have been obtained by adding various quantities of this mixture to the bath, at from 100 deg. to 120 deg. Fahr., entering the goods to be dyed at 180 deg. to 212 deg. Fahr., dyeing taking from thirty minutes upwards, according to shade.

MANUFACTURERS' DYESTUFFS

In manufacturing a dyestuff from these lead compounds, a saturated solution of a soluble lead salt is combined with a soluble salt of iron or copper which contains water of crystallization by first rendering the iron or copper salt anhydrous, and then replacing the water of crystallization by the saturated lead solution. Soluble vegetable or organic coloring matters may be added to this lead solution and dissolved in it prior to its being combined with the anhydrous iron or copper salt. The quantity of iron or copper salt to be used will, of course, be calculated from the known quantity of water of crystallization originally contained in a given quantity of the iron or copper salt. The water of crystallization must be equal to, or greater than, the water contained in the lead solution.

The combination of the lead solution with a copper salt yields a dyestuff capable of imparting a good direct khaki to woolen, when used in conjunction with an alkaline mordant. The combination of an iron salt with the lead solution yields a brown.

When using the combination of a solution of a soluble lead salt with the anhydrous copper sulphate or salt previously described, a mordant is used, composed of a ground down mixture of sodium carbonate and calcium oxide. Six parts of sodium carbonate and four parts of calcium makes a good mixture, but other proportions may be used. Dyestuff and mordant may be used in equal proportions, the combined quantities being regulated according to the depth of shade required.

In dyeing with these substances the required quantity of dyestuff is entered into the dye bath at from 90 deg. to 120 deg. Fahr. When the dyestuff has dissolved the goods are entered and the temperature of the dye liquor raised to 212 deg. Fahr. While the dye liquor

is coming to the boil the required quantity of mordant is put in with an enameled iron vessel with from twelve times upwards by bulk of cold water, and the liquid is brought to the boil. After the sediment has settled, and when the dye bath has been raised to 212 deg. Fahr., the goods are lifted and the clear mordant liquor is put into the dye water. If necessary, a strainer is used to prevent any of the sediment passing into the dye bath.

It will be obvious that an extensive variety of shades may be produced by mixing the various substances or by successively dyeing the same fabric with two or more of the colors. The production of certain of these shades, however, necessitates the use of an acidified solution of the metallic salt.

PRINTING RESISTS

For tissue printing various resists or alterants may be topically applied prior to the dyeing of the fabric in order to produce various effects.

As an instance of the use of sulphur when the color goes on wool but not upon cotton, sulphur is added to the extent of from one-quarter to one-half of the weight of the lead compound used before mixing in the caustic cal-

cium or sodium hydrate. After entering the cotton goods, the dye bath is brought to 212 deg. Fahr., at which temperature the color rapidly takes upon the cotton.

The inventor is of the opinion that, with certain exceptions, these colors result from the formation of wholly or moderately insoluble metallic sulphides within or upon the yarn or fabric to be dyed. In this connection it may be stated that the inventor has found that the use of a metallic sulphate, or the addition of sulphur to the dyestuffs, tends to intensify or deepen the shades produced upon the wool.

It is not only the alkaline reactions or the formations of alkaline or neutral sulphurets that produce certain shades, but certain metals—copper, for instance—have their sulphides precipitated by the evolution within, or the passing of sulphuretted hydrogen through an acidified solution of their salt. Fibers which do not contain sulphur in themselves should be treated in the manner indicated for cotton.

In connection with the use of the dyestuffs herein described, the inventor has electrolyzed the water in the dye bath to precipitate or produce the colors within or upon the yarn or fabric to be dyed instead of raising the temperature.

—*Dyer & Calico Printer.*

To carry on the business of dyers, bleachers, mercerizers and finishers of textiles, the Hudson Dyeing Company has been incorporated under the laws of Massachusetts at Hudson, that State, with a capital of \$15,000.

AMERICAN DYESTUFFS IN THEIR RELATIONS WITH THE FAR EAST

By PAUL NOBBE

Vice-President and Sales Manager, American Aniline Products, Inc., New York

DYESTUFF making is a *science*. Once the Japanese consumer understands that truth, he will understand why dyestuff business can only be conducted on scientific lines, if it is to prosper. That does not imply that the commercial handling of dyestuff requires a scientist, but it does imply that the proper development of the dyestuff business requires a large amount of technical information on the part of the manufacturer in regard to the exact requirements of his customers.

He should know the material or materials to be dyed, the fastness properties demanded, and the dyeing machinery which the individual dyer has at his disposal.

With such information at hand, he is in a position to make the proper recommendations as to colors of his own manufacture suitable for such work, or if he is not in a position to do so, he can at least indicate to his chemists certain lines of research that are likely to lead to the proper colors. And it is information of this kind that is woefully lacking as between the American manufacturer and the Japanese consumer, whether the latter be a cotton, wool, silk, jute, paper, ink manufacturer, carpet mill, tannery or what not.

The present business in American-made anilines to the Far East at this time is a haphazard affair, pure and simple, and it will not survive the war, unless an effort is put forth to a more perfect understanding of the fundamental facts. "*Knowledge is capital.*" And for more reasons than one it would seem as much in the interest of the Japanese consumer to foster the American dyestuff industry as it is to the advantage of the American manufacturer to get a foothold in the Japa-

nese market, for it cannot be doubted that there will be a tremendous expansion in the American industry after the war.

In making this prediction we are basing our views on past performances (1916-1918), which to say the least, have been marvelous when we realize that to-day there is manufactured in the United States a full range of all the primary colors of the various groups. The ordinary wants can be satisfied without any trouble. On the other hand, there are hundreds of the better and faster grades of colors, formerly made on the Continent, that we cannot now produce, less for the reason that we do not possess the necessary scientific knowledge than because either the raw materials, where they might be obtainable, regardless of their possibilities in the aniline field, are converted into things to win the war or because the prices for the raw materials would be such as to render the colors prohibitive in cost.

Viewing our own accomplishments in the dyestuff field, we can point with pride to a number of very difficult colors of which we were the American pioneers, such as *Amanil Sky Blue*, the first direct sky blue made in America on a commercial scale; *Methyl Violet 6 B Crystals*, *Methylene Green B*, and last, but not least, the one color which no silk dyer can do without, *Victoria Blue B*, equal in every respect to the German-made products.

To these we can add a long list of colors, direct, basic, acid, chrome and sulphur, of all descriptions; colors which will dye cotton and silk alike, colors which will dye silk and half-silk in a soap and soda bath, so that the silk can either be left white or cross-

dyed in plain or fancy effects, as the case may be; colors which will discharge a pure white with hydrosulphite—cotton, silk or halfsilk; fast colors for *khaki* and *navy* shades on wool for Government use, such as our alizarine yellow, orange, brown and chrome black, or alizarine navy blue and alizarine serge blues, the blues being used on a chrome mordant for cloth of all descriptions; sulphur colors for khaki shades on cotton for army uniforms; chrome colors for cotton printing; blacks and fancy colors for vegetable or chrome tanned leather; colors for paper, whether dyed in the pulp or in the sheet, or used for calendar work; colors for dyeing animal fur; oil and spirit soluble colors for varnishes, woodstains, etc., and, as the greatest achievement yet, the first American-made vat color—our *Amanil Vat Olive*, a color belonging to the group of the celebrated *indanthrene* colors of the *Badische Company*, faster than which no aniline colors exist, and, as such, a color in which every Government is vitally interested for olive drab on cotton uniform cloth.

The one thing to impress upon the Far Eastern buyer is the fact that at this time at least dyestuffs should be bought in bulk, by which we mean packages containing from 100 to 500 pounds net, as the case may be.

Packages such as were formerly the custom, whether 2, 4, 8 or 16 ounce bottles or tins, are out of the question at this time. The policy of conservation which every Government has to practice in these days of strife condemn

such packing as "*waste*," and waste it is, not only in the sense of waste of available raw material, but waste also in the sense that 50 per cent, if not more, of the material put up in small packages is actually wasted or thrown away.

The dyestuff imports into China, as an example, would, in the writer's opinion, be reduced by one-half in value if bulk packing were adopted. And therein lies the reason why the German manufacturer has fostered and encouraged for all these years the idea of small packing. In the first place he sold twice as much in quantity as he would ordinarily, and secondly, he obtained for bottles, tins, wrapping paper and labels a return far beyond the original cost of intrinsic value of such materials; they were paid for as *color*—a profitable business in itself.

To wind up, what it has taken Germany fifty years to accomplish the United States of America is rapidly accomplishing within a space of a few years, and we may safely prophesy that with the immense resources of the North American continent in raw materials, the tremendous plants built for explosives which can readily be converted into color factories when the proper time comes, with the indomitable American spirit pervading every branch of industry, Germany will have to look to her laurels, and in the meantime every foreign consumer of dyestuffs will do well to watch closely the progress of the American manufacturer and to encourage him to the fullest extent.

BRITISH DISCOVERY WILL AID DYE INDUSTRY

Sir William Crookes, in his publication the *Chemical News*, notes that a new British key industry has been created by the discovery of a process to treat an English mineral earth and convert it into a product invaluable, and, in some cases, indispensable for a number of trades and industries.

British trades and industries that benefit from the new product include the manufacture and treatment of colors, paints, printing inks, soaps, toilet preparations, starch, leather, heat-resisting materials, insulating material and lubricants.

The substance (known commercially as Catalpo) is expected to prove of considerable assistance in the British dye industry.

The discovery of the substance was made after years of research, and the *Daily Express* is able to quote two leading authorities regarding the merits of the product:

Mr. J. Allen Howe, B.Sc., F.G.S., the geologist and curator of the Government Museum of Practical Geology, Gernym Street, states that the product is the result of a new chemical process, that it fills a great requirement, that it should be of national importance, and that its commercial uses should be numerous.

Prof. J. W. Hinchley, A.R.S.M., Wh.Sc., F.I.C., of the Imperial College of Science and Technology, South Kensington, the authority on chemical engineering, was equally emphatic. He stated that the substance could be used as a base for the production of colors or pigments, as a filling material where a neutral and finely divided material is

desirable, and for many other purposes.

"Practically new materials have been produced by its means from what were formerly waste products," he continued, adding that its high chemical purity was of great value.

BRITISH DYES AND LEVIN- STEIN UNITE

Despite numerous obstacles, including an endless array of details which had to be worked out to the satisfaction of conflicting views, and despite the gloomy predictions voiced at great length in the English trade press, word has been received on this side of the water that the long-hoped-for merger of British Dyes, Ltd., and Levinstein, Ltd., is now virtually completed. While precise information as to the terms of the amalgamation is at present wanting, this action on the part of these two most powerful single factors in the development of the British dye industry represents a large step forward. It is the belief of those in touch with conditions among our Anglo-Saxon cousins that the step will be but the forerunner of others, all looking to the ultimate ostracism of the Hun from the dye markets of that country, for it is the argument of those in favor of wholesale amalgamation that it was by this method that the Germans first gained their commercial domination. There is no question, certainly, but that the amalgamation idea is rapidly gaining favor among the dye manufacturers of the world.

NOTES OF THE TRADE

Announcement has been made by the Marden, Orth & Hastings Corporation that former Secretary Arthur C. Trask has been elected vice-president of the organization, with headquarters at Chicago. His place will be filled by Walter O. Hastings. The new vice-president has been associated with the corporation for upwards of seventeen years, while Mr. Hastings is one of the three members of the partnership which, in 1906, took over the business founded by James A. Murdock some eighty-one years ago. In this connection it is interesting to note that M. S. Orth, the present president of the firm, is a direct descendant of Mr. Murdock. The corporation further announces to the trade that within the past few weeks it has opened new branches at 1303 Shelby Street, Louisville, Ky., and in the Union Trust Building, Cincinnati, Ohio. more than \$200,000,000 capital.

With a capital of \$10,200, the Stuyvesant Chemical Company, Ind., has been incorporated under the laws of New York to manufacture dyestuffs and chemicals. Headquarters of the concern will be located in New York City.

Alterations and extensions to their works will be carried on by the General Manufacturing Company, Snyder and

Swanson Streets, Philadelphia, the contract having been awarded to Henry P. Friem, Inc., Norristown, Pa. The concern is engaged in the manufacture of chemicals.

Prompt action enabled the proprietors of the Knight Woolen Mills, Provo, Utah, to save practically all of the weaving, dyeing, finishing and garment making departments when a destructive fire visited the plant recently.

It has been reported that a new dye plant, to employ 100 people, will be erected at Cable, Wis. Further details of the project are wanting to date.

Work is being rushed by the Westmoreland Chemical & Color Company, whose plant at Philadelphia was recently destroyed by a visit of the fire demon, on the reconstruction of the consumed buildings at a cost of \$15,000.

To manufacture chemicals, the Mineraline Chemical Company has been incorporated with a capital of \$5,000 at San Diego, Cal. The incorporators are M. Time, J. M. O'Neill and A. B. Hansen.

Salicylic acid and kindred specialties will be produced on a capacity basis by the new plant of the American Chemical Products Company, located at Colgate Street and South Park Avenue, Buffalo, N. Y. This plant was but recently completed.

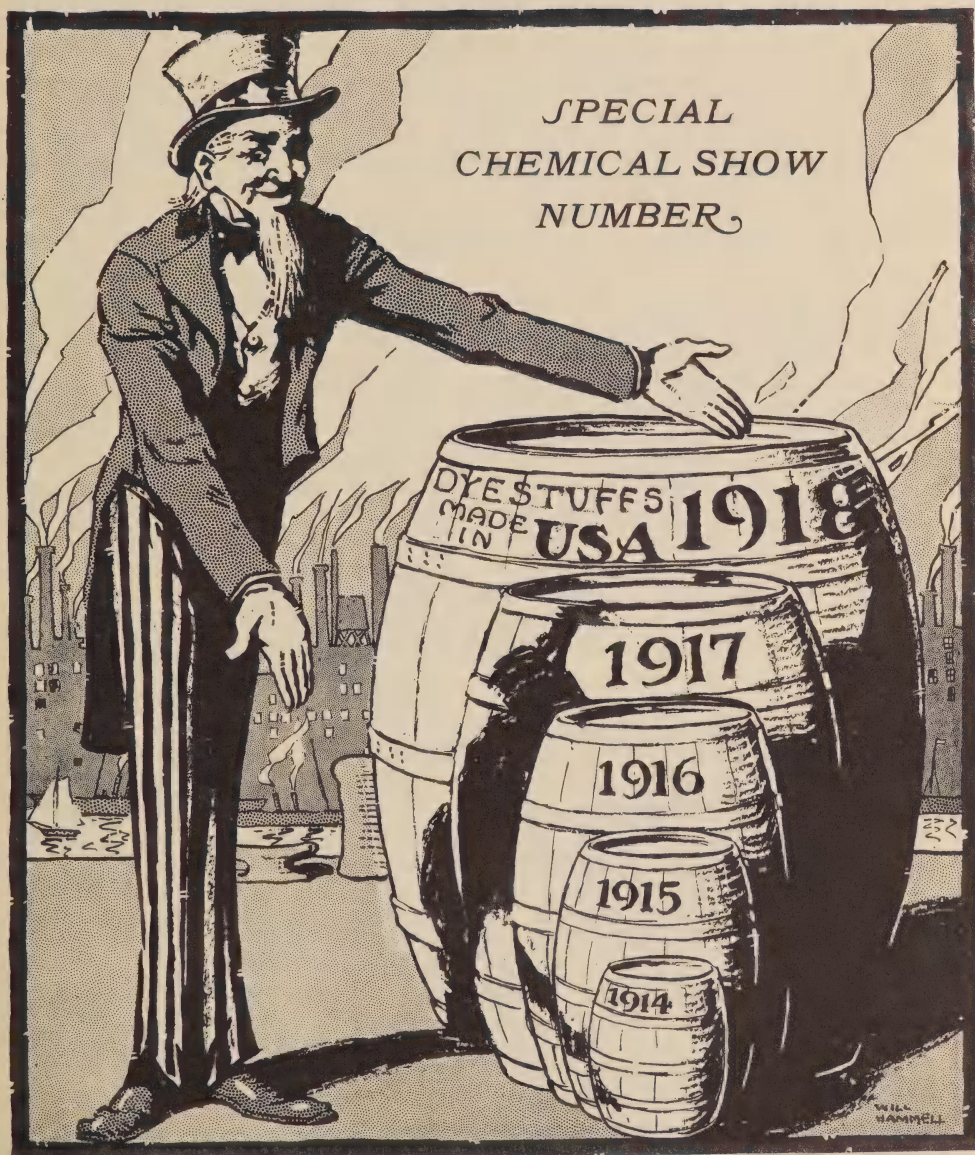
A recent report from the United States Government indicates that there are now 125 factories for the production of dyestuffs in this country. These plants represent a total investment of more than \$200,000,000 capital.

AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, September 23, 1918

No. 13

THE CHEMICAL EXPOSITION

Many Interesting Dyestuff Exhibits — Full List
of Exhibitors—Marked Advances Since Last Year

THE National Exposition of Chemical Industries which opens today, September 23rd, in the Grand Central Palace, is the fourth of its kind to be held since the outbreak of the war, and each succeeding year has shown wonderful development in the scope of its interest and usefulness. Its managers have been peculiarly energetic and efficient, and have contrived to make previous expositions—and it is expected that the present one will prove no exception—of very great benefit to the exhibitors from a practical business-producing standpoint and of greater value to consumers in illustrating the strides which chemical development in this country has made since America was thrown upon her own resources.

Commercial expositions of all kinds are, of course, promoted by their managers for the purpose of making money; and no exposition which fails of this object can be considered successful. The fact that the chemical exposition has increased in size and popularity with each succeeding year gives ample testimony to the fact that its managers have been thoroughly satisfied with the pecuniary rewards obtained. But, by the exhibitors and the lay public, expositions of this sort are not viewed

as immediate money-makers, but rather as instruments for the obtaining of good will and general publicity for manufactured products and for the spread of information and the general education of the consuming public. More than this, expositions of this kind afford a common meeting-ground where all members of the industry, whether manufacturers, consumers, or those only indirectly associated, may meet and discuss their varied problems in a congenial and informal manner which results in untold benefit to the industry as a whole.

Members of the dyestuff industry who visit the exposition will, of course, be primarily interested in the exhibits of the various dyestuff manufacturers. Of these there are in all fifty-two, although some of these exhibits are those of subsidiary companies included under one head. Probably in no branch of the chemical industry has such great progress been made within the last few years as in the manufacture of dyestuffs. This is, of course, natural, because of the fact that until the outbreak of the war America was almost exclusively dependent upon Germany, but it testifies none the less to the energy, persistence and resource of our dyestuff chemists and to the courage and fore-

sight of the individuals who supplied the capital to make possible the development of this newest of American industries.

Visitors to the exposition who are interested in dyestuffs will find ample material to occupy their time and attention. Never before has there been gathered under one roof anything to approach the showing of bases, intermediates and dyestuffs of American origin, as well as all manner of samples of finished goods in the coloring of which these products have been used.

We have been privileged to examine in advance the exhibits of many of the dyestuff manufacturers, and are satisfied that they will prove of very unusual interest to the consumers who visit the exposition. Some, of course, are of much greater pretensions than others, but even the smallest of them will be found to have interesting and noteworthy features. An especially interesting feature of the exposition will be a bull's-eye label which will be attached to all products which have been developed in the United States since the outbreak of the war. Within this classification practically all finished dyestuffs and a great majority of intermediates will be classed. In this way the layman will be able to see at a glance the progress which has been made by the American dyestuff industry since the outbreak of the war.

On the following pages will be found some special account of many of the dyestuff exhibits. From those firms who are not mentioned we have failed, up to the time of going to press, to receive details of their exhibits. The following is a list of the manufacturers of dyestuffs and allied products who are making exhibits at the exposition:

LIST OF DYE MANUFACTURERS WHO WILL EXHIBIT

American Aniline Products, Inc.,
80 Fifth Avenue, New York.

Apex Chemical Co., Inc., The,
Pulitzer Building, New York.

Arnold, Hoffman & Co.,
61 Broadway, New York.

Bachmeier & Co.,
438 West 37th Street, New York.

Barrett Co., The.

Whitehall Building, New York.

Bound Brook Chemical Co., The,
Bound Brook, N. J.

Butterworth-Judson Corporation, The,
61 Broadway, New York.

Campbell, John, & Co.,
75 Hudson Street, New York.

Chemical Co. of America, The,
28 Platt Street, New York.

Chromos Chemical Co., The,
Aeolian Bldg., 42nd St., New York.

Crescent Color & Chemical Co.,
11th Ave. and 59th St., New York.

Dow Chemical Co., The,
Midland, Mich.

Drackett & Sons, P. W.,
Cincinnati, Ohio.

Du Pont, E. I. de Nemours & Co.,
Wilmington, Del.

Dye Products & Chemical Co., The,
200 Fifth Avenue, New York.

Edison International Corporation, The,
165 Broadway, New York.

General Chemical Co., The,
25 Broad Street, New York.

Heald & Co., John H.,
Lynchburg, Va.

Hellenic Chemical & Color Co., Inc.,
The,
1 Cedar Street, New York.

Hemingway, Inc., Frank,
115 Broadway, New York.

Imperial Color Works,
Glens Falls, N. Y.

Imperial Dyewood Co.,
Marbridge Building, New York.

Independent Chemical Co.,
72 Front Street, New York City.

Innis, Speiden & Co.,
46 Cliff Street, New York.

King Chemical Co.,
72 Front Street, New York.

Kalbfleisch Corporation, The,
31 Union Square, New York.

Klipstein & Co., A.,
644 Greenwich Street, New York.

Marden, Orth & Hastings Corporation,
The,
61 Broadway, New York.

Metz & Co., Inc., H. A.,
122 Hudson Street, New York.

National Color & Chemical Co.,
11th Ave., and 59th St., New York.

National Gum & Mica Co.,
11th Ave. and 59th St., New York.
National Aniline & Chemical Co., Inc.,
21 Burling Slip (foot of John St.)
New York.
Newport Chemical Works, The,
Passaic, N. J.
Obex Co.,
11th Ave., and 59th St., New York.
Peerless Color Co.,
72 Front Street, New York.
R. U. V. Co., The,
165 Broadway, New York.
Semet-Solvay Co., The,
Syracuse, N. Y.
Solvay Process Co.,
Syracuse, N. Y.
Seydel Manufacturing Co., The,
86 Forrest Street, Jersey City, N. J.
Stamford Extract Co., The,
82 Wall Street, New York.
Stein, Hall & Co., Inc.,
61 Broadway, New York.
Sterling Color Co., The,
72 Front Street, New York.

Takamine Laboratories, Inc., The,
120 Broadway, New York
Warner Chemical Co., The,
52 Vanderbilt Avenue, New York.
Warner-Klipstein Co.,
52 Vanderbilt Avenue, New York.
Williamsburg Chemical Co., The,
230 Morgan Avenue, Brooklyn, N. Y.
Wolf & Co., Jacques,
Passaic, N. J.

Some of the more interesting of the dyestuff exhibits are described in the following paragraphs:

E. I. DU PONT DE NEMOURS & Co.

The exhibit of the du Pont Allied Industries will occupy booths Nos. 7-8-9 on the first floor. Exhibits of the products of all the associated companies will be shown. These include explosives made by E. I. du Pont de Nemours & Co.; Pyroxylin and coal tar chemicals by the du Pont Chemical Works; leather substitutes by the du Pont Fabrikoid Company; Ivory Py-ra-line and "Challenge" collars by the Arlington

Works; paints, pigments, acids and chemicals by the Harrison Works; and coal tar dyestuffs by the du Pont Dye Works.

The dyestuffs exhibit will include a very unusual showing of intermediates upon which particular stress is being laid by the du Pont Company. There are also to be shown a number of finished dyestuffs which the company is now marketing commercially. The company will make no effort to show dyed samples or products in which their colors have been used. Following is a list of the dyes and intermediates which will be included in the du Pont dyestuffs exhibit:

DYESTUFFS

du Pont Indigo 20 per cent Paste
 Pontachrome Yellow GG
 Pontachrome Brown 3G Paste
 Pontachrome Brown MW Paste
 du Pont Orange II Conc.
 du Pont Azo Carmine
 du Pont Scarlet GR Ext.
 du Pont Malachite Green
 du Pont Crystal Violet Pd.
 du Pont Victoria Blue BX
 du Pont Victoria Blue B Base
 du Pont Chrysoidine R
 du Pont Auramine O
 du Pont Rhodamine B
 du Pont Paper Blue R Conc.
 du Pont Phloxine
 du Pont Spirit Scarlet B Ext.
 Sulphogene Black GX
 Sulphogene Khaki GX
 Pontamine Yellow CH
 Direct Sky Blue
 Direct Blue BB
 du Pont Acid Violet 10 B

INTERMEDIATES

Diethylaniline
 Monoethylaniline
 Paranitrotoluenesulphonic Acid
 Orthonitroanisole

Orthoanisidine
 Diethylaniline Sulphonic Acid
 Diethyl-meta-amido-phenol
 Benzyl methyl aniline
 Phenyl naphthylamine
 Paranitrophenetol
 Paraphenetidine
 Michler's Ketone
 Tetra methyl diamino diphenylmethane
 Tetra methyl diamino diphenyl benzhydrol
 Diamino Stilbene Disulphonic Acid
 Ethyl Bromide
 Dichlorophthalic Acid
 Dichlor Fluoresceine
 Nitrobenzol
 Diphenylamine
 Phthalic Anhydride
 Dinitrotoluol
 Denzidine
 Meta phenylenediamine
 Meta toluylenediamine
 Orthonitrophenol
 Paranitrophenol
 Dianisidine
 Dimethylaniline
 Monochlorbenzol
 Dichlorbenzol
 Mononitrochlorbenzol
 Dinitrochlorbenzol
 Dinitrophenol
 Dehydrothiotoluidine
 Mononitrotoluol
 Orthonitrotoluol
 Paranitrotoluol
 Orthotoluidine
 Paratoluidine
 Paranitrotoluol Sulphonic Acid
 Dinitrobenzol
 Metaphenylenediamine
 Metatoluylenediamine
 Picramic Acid
 Benzaldehyde
 Benzoic Acid
 Salicylic Acid
 Sulphanilic Acid
 Nitrosophenol

Nitrosocresol
Paramononitrochlorbenzol
Orthomononitrochlorbenzol
Mononitrophenylene
H Acid
Peri Acid
Laurent's Acid
Cleves' Acid
1:5 Oxy Acid
Silver Salt

NATIONAL ANILINE & CHEMICAL CO.,
INC.

This concern will occupy booths Nos. 16-17-18 and one-half of No. 15, on the first floor. The exhibit will be similar to that displayed at the recent Textile Show, which excited such favorable comment among visitors, and which has since been exhibited at several different cities throughout the United States. The chief distinction between the present exhibit and the one at the Textile Show will be that more attention will be given to the chemical side (intermediates, dyestuffs, etc.), and less to the textile side. The revolving stands of comparative tests of German and American dyes will again be shown and the miniature laboratory will be in operation. The following extract taken from a booklet which will be distributed at the exposition gives the chief details:

"The group of large display bottles contains product samples of dyestuffs as they are produced at the several works of the company. To this array of dyes there are being added at frequent intervals new products to which the attention of the dye-consuming public is promptly directed. In the five large jars there are shown dyestuffs of the greatest importance, viz.: synthetic indigo, alizarine, hydron blue, patent blue, and alizarine cyanine. The production of these dyestuffs marks great strides in the development of the American dyestuff industry. The remainder of this elaborate display comprises coal-tar coloring matters that find extensive application wherever colors are employed. The groups include important representatives of the acid colors, direct colors, developed colors, and important range of sulphur colors, chrome colors—among which are to be included some of

the fastest known dyes for wool—basic colors, together with some dyes of limited though important application that are used in non-textile industries.

"The manufactured goods forming part of this exhibit have all been dyed with 'National' colors. These exhibits have been loaned by various mills using our products, for the purpose of showing that American manufacturers of textiles have promptly availed themselves of the opportunity of using American made dyes, and find that they meet the usual requirements of the trade. These exhibits include hosiery of various kinds, flannels, shirtings, dress goods, fabrics for men's wear, military cloth of various kinds used in the army and navy, mercerized cotton, shoddy, silk goods, leather, etc. All these have been dyed with colors produced by the National Company, and practically demonstrate the wide adaptability of its products for every phase of textile and allied fields.

"Special interest is attached to the sample of mauve, displayed in the brass

case, which was dyed by Sir William Henry Perkin, the English discoverer of the first coal tar color, over fifty years ago. The dyeing was presented to William J. Matheson, president of the National Company, by Sir William Henry Perkin in 1906.

"Forming part of the general exhibit is a working unit of a fully equipped color testing laboratory identical with those in operation in daily use in the laboratories of our works and branches. During the exhibition actual practical comparative dye trials are made upon cotton, wool and other textiles. These tests are for the purpose of demonstrating the methods followed in modern color laboratories, and also show in a practical manner that dyes of coal tar origin now made in America are the equal in shade, strength, working qualities and fastness of dyes of the same class that were formerly imported from Germany.

"The dyed samples displayed on two revolving stands present to the public the general facts regarding the relative fastness of some of the dyes made by the National Company and dyed parallel with dyes of known German origin of the same class. This special exhibit will show that all dyes now regularly manufactured by this company possess the same degree of fastness to light, weather, scouring, fulling, etc., as dyes of the same class of German origin that were formerly imported into this country. These dyeings of American colors, which are displayed side by side with the similar German ones, have previously been subjected to the same tests. It is believed that this feature, in conjunction with the remainder of the exhibit, will demonstrate that the promise of this country to place on the American market an adequate and comprehensive line of satisfactory colors is being fulfilled."

The exhibit will, as formerly, be in charge of Dr. Louis J. Matos and a competent corps of assistants.

NEWPORT CHEMICAL WORKS, INC.

The exhibit of the Newport Company this year will not be very extensive, so far as finished dyestuffs are

concerned. The chief aim of this company will be to show by ocular demonstration the independence of this country, and of the Newport Company in particular, in the field of aniline dye making. The possibility of producing practically any shade on any class of material with American-made dyes will be demonstrated, as will also the company's complete independence all the way from the basic raw material—coal—to the finished dyestuffs. The Newport Company is rapidly adding new colors to its list, and in the very near future will be able to show products which have not previously been manufactured in this country.

A. KLIPSTEIN & Co.

The exhibit of A. Klipstein & Co. will occupy booths Nos. 209 and 210. It will consist primarily of product samples of various chemicals, gums, dyestuffs, oils, glycerines, tanning materials, softeners and finishers handled by this firm.

The dyestuff section will also include dyed samples of colors made in America by the Bulls Ferry Chemical Company and E. C. Klipstein & Sons Company, as well as those imported from Switzerland, which are the product of the Society of Chemical Industry in Basle, who are the largest producers of synthetic indigo in the world, and for which concern A. Klipstein & Co. are sole American selling agents. The exhibit will be under the supervision of E. H. Klipstein.

BUTTERWORTH-JUDSON CORPORATION

The exhibit of the Butterworth-Judson Corporation will occupy booths Nos. 469 and 470 on the third floor, and will include type samples of the following products made by this concern:

Victoria Blue "B," Victoria Blue Base, Crystal Violet Stand., Crystal Violet Conc., Crystal Violet Base, Me-

tachrome Brown, Dinitro Benzol, Benzidine Base, Benzidine Sulphate, Picramic Acid, Benzyl Chloride, Ortho Nitro Phenol, Para Nitro Phenol, Michler's Ketone, Phosgene, Paranitraniline, Chlorsulphonic Acid, Salicylic Acid, Alpha Naphthylamine, Sulphuric Acid, Muriatic Acid, Nitric Acid, Salt Cake, Nitra Cake, Nithopone.

THE BARRETT COMPANY

The exhibit of the Barrett Company will occupy booth No. 24, where a number of products produced and handled by the Chemical Department will be shown. The exhibit will be primarily educational in character with a view to appealing to the lay as well as to the technical visitors. There will be shown again this year an illuminated coal-tar chart with a great number of actual samples of materials obtained by the destructive distillation of coal. This chart, when shown at last year's exposition, excited considerable comment. There will also be shown samples of a number of refined coal-tar products which enter into the dyestuff and phar-

maceutical fields as crudes, showing in connection with these samples, by means of cards connected by ribbons to the jars which contain them, the various steps through which these so-called crudes must pass before reaching the final finished dyestuff or pharmaceutical product.

There will also be shown an interesting service flag bearing six stars, each star containing the names and representing six extremely important products of the Barrett Chemical Department which enter into the manufacture of explosives. This flag will be especially interesting at this time as a "win-the-war" feature. From the various stars ribbons will lead to placards showing the names of the actual explosives as they are used by the United States and Allied governments. There will also be shown a product cabinet which will contain several products which the Barrett Company is particularly endeavoring to promote at this time, these products representing in most instances very recent developments in the chemical industry. The exhibit will be under the direction and in charge of H. S. Sidebottom, technical service manager of the Barrett Chemical Department.

SEMET-SOLVAY COMPANY

The exhibit of the Semet-Solvay Company and its contemporary, the Solvay Process Company, will be shown in booths Nos. 10 and 11. The materials which will be exhibited will be coal and the products of its distillation as produced by the By-Products Coke Company, together with various materials manufactured from them. These products will include Coke, Light Oils, Tar, Ammonia, Ammonium Chloride, Ammonium Bicarbonate, Ammonium Sulphate, Carboic Acid, Picric Acid, Ammonium Picrate, Trinitrotoluol, Benzoic Acid, Benzaldehyde, Benzyl Chloride and Salicylic Acid. There will also be shown some data on the "Safety First" work in their plant, and an outline of the progress of manufacture through samples of crude materials and finished products, arranged in their order of sequence.

JOHN CAMPBELL & Co.

The exhibit of John Campbell & Co. will occupy booths Nos. 489 and 490. The exhibit will include a complete line of the following series of colors of this firm's manufacture: Aceko Series (standard acid colors for wool and silk), Amidine Series (direct cotton colors), Krameko Series (fast chrome colors for mode and Government shades), Amalthion Series (sulphur colors), as well as a complete line of basic colors.

SEYDEL MFG. Co.

The exhibit of the Seydel Mfg. Co. will occupy booths Nos. 272 and 273. It will comprise an exhibit of Benzoic Acid, Benzoate of Soda, and a complete line of Medicinal Benzoates, including, particularly, Benzyl Benzoate, which is most prominent because of discoveries made by Dr. David I. Macht, of Baltimore, that this product is an excellent substitute for opium alkaloids in the treatment of smooth muscles. The feature of the Seydel Benzoate line is that

all products are guaranteed free from chlorine.

There will be shown also samples of the following Furamine Dyes: Furamine D (black), Furamine DB (blue black), Furamine P (blue), Furamine GG (yellow), Furamine A (bluish black of exceptional tone and excellent dyeing qualities). Type samples of the above products will be shown representing actual plant production. The results obtained with Furamine dyes will be illustrated by a collection of valuable furs.

AMERICAN ANILINE PRODUCTS, INC.

The exhibit of American Aniline Products, Inc., will occupy booths Nos. 201-2-3-4-5. The exhibit will include both type and dyed samples of various products manufactured by this concern, special emphasis being laid on khaki and navy dyes for Government work. Managers from the New York, New England and Southern offices of the concern will be in attendance at the exhibition.

JACQUES WOLF & Co.

The exhibit of Jacques Wolf & Co. will be shown in booths Nos. 423 and 424 on the third floor, and will include the following products: Alizarine Yellows and Chrome Black, especially suited for khaki shades; Hydrosulphite A. W. C., a substitute for Rongalite C; Monopole Oil for finishing purposes; Benzapol for wool scouring; Textile Gum for fabric printing; Sulphur Black and a full line of softeners and finishing preparations for cotton, wool and silk.

THE DOW CHEMICAL COMPANY

The exhibit of the Dow Chemical Company will occupy booth No. 87, and will consist of nearly seventy different chemicals manufactured by this concern. Particular emphasis will be laid on Dow Synthetic Indigo and Dow

Dibromindigo and the various intermediates manufactured by this concern.

THE KALBFLEISCH CORPORATION

The exhibit of the Kalbfleisch Corporation will occupy booths Nos. 555 and 556 on the third floor, and will include particularly samples of the different grades of Sulphate of Alumina used for the purification of water, paper sizing, dry colors, etc.; also samples of Salt Cake used in the manufacture of glass and paper makers' Sulphate or Kraft Pulp. Samples of Sulphuric, Nitric and Muriatic Acids and Aqua Ammonia, which are at the present time in great demand for war purposes, will also be shown. A specialty worthy of note is the pure anhydrous Sulphate of Soda manufactured by this concern which has great possibilities in the standardization of aniline colors.

FRANK HEMINGWAY, INC.

The exhibit of Frank Hemingway, Inc., will consist of dyestuffs, intermediates, chemicals and pharmaceuticals handled by this firm. The following dyestuffs in particular will be featured: Victoria Blue, Crystal Violet, Meta Chrome Brown, Chrome Brown and Chrome Green. The dyestuff section of the exhibit will be in charge of Thos. F. O'Keefe, the intermediate section in charge of H. H. Foster, and the chemical section in charge of Howard A. Ambruster.

BACHMEIER & Co., INC.

The exhibit of Bachmeier & Co., Inc., will occupy booth No. 502, and will include a full line of their Baco dyes. These colors, although not manufactured by this concern, have all been subjected to rigorous tests at the Baco Laboratories, and are standardized under a rigorous policy of "always the same."

THE CHEMICAL COMPANY OF AMERICA

The exhibit of the Chemical Company of America will occupy booths Nos. 279-280-81-82, and will include samples of an excellent khaki color, as well as the following chemicals:

Nitro Benzol, Aniline Oil for Red, Benzidine Sulphate, Benzaldehyde, Monoethylaniline, Metaphenylenedia-

mine, Paranitrotoluol, Paranitracetanilid, Aniline Oil, Benzidine Base, Benzyl Chloride, Diethylaniline, Metatoluylenediamine, Mixed Toluidine, Paraphenylenediamine, Paramidophenol Base, Paramidophenol HCl.

The exhibit will be in charge of Messrs. Kendall and Christ.

STEIN, HALL & Co.

The exhibit of Stein, Hall & Co., in booths Nos. 211 and 212 on the mezzanine floor, will be devoted to the chemicals and starch products manufactured by this company, and will be in charge of Lewis W. Peabody.

INNIS, SPEIDEN & Co., Inc.

The exhibit of Innis, Speiden & Co., Inc., will feature the following products manufactured and handled by this concern: Heavy Chemicals, Waxes, Gums, Silicas and Leather Specialties.

GENERAL CHEMICAL COMPANY

The exhibit of the General Chemical Company will occupy booths Nos. 53 and 54, and will consist of samples of the following products manufactured by this concern: Commercial Acids, C. P. Acids and Ammonia, Reagent Chemicals, Alum, Alumina Sulphate, Ammonia, Acetyl Chloride, Copper Sulphate, Iron Salts and Solution, Lead Acetate, Magnesium Salts, Sodium Salts and Solution, Sulphur, Tin Salts, Sulphate of Zinc, etc.; also "Orchard" Brand Insecticides and Fungicides, "Lariat" Brand Cattle Dips and "Ryzon" Baking Powder.

The exhibit is in charge of N. Peterkin and a number of representatives of the sales department.

CHROMOS CHEMICAL COMPANY, INC.

The exhibit of the Chromos Chemical Company, Inc., will consist of a display of Benzoic Acid, U. S. P.; Benzoate of Soda, U. S. P., and Benzyl Chloride, all of which products are manufactured by this concern.

THE STAMFORD EXTRACT MFG. CO., INC.

The exhibit of the Stamford Extract Mfg. Co., Inc., will be confined to an exhibit of samples of various logwood and other natural dyestuffs manufactured by this concern, as well as samples dyed therewith. The exhibit will be in charge of H. S. Stanley.

WILLIAMSBURG CHEMICAL CO., INC.

The exhibit of the Williamsburg Chemical Company, Inc., will occupy booths Nos. 294 and 295, and will include both type and dyed samples of the colors manufactured by this concern. A particularly noteworthy feature of the exhibit will be samples of special work done by customers of the Williamsburg Chemical Company. The exhibit will be in charge of Chas. L. Hirsh.

APEX CHEMICAL COMPANY, INC.

The exhibit of the Apex Chemical Company, Inc., will occupy booth No. 471, and will include a line of chemical products used by the leather, textile and allied industries, as well as materials which have been treated with these products. A particular feature will be made of the following: Antimonelle, a substitute for Tartar Emetic, which is materially cheaper; Orthophene Bate, a product which takes the place of animal

dungs for delining hides and skins; Lactic Acid Refined, a quality lighter in color than the usual commercial lactic acids.

IMPERIAL COLOR WORKS

The Imperial Color Works, in conjunction with its associated companies, the Imperial Dyewood Company, both of Glens Falls, and John H. Heald & Co., Inc., of Lynchburg, Va., will co-operate in an exhibit of dry and pulp colors and dyewood extracts. There will be shown dry pigment colors for the paint, printing ink, and kindred trades, and pulp pigment colors for the surface coating and paper mills trade. As a part of the exhibit will be shown Alizarine Yellow GG and R, products which have been developed by the Imperial Color Works and improved for wool dyeing for army khaki.

Dyewood products shown by the Imperial Dyewood Company and Messrs. Heald & Co. will include, logwood, hypernic, fustic and hematine in both crystal and paste forms.

There will also be shown dyed samples colored with the various products above mentioned.

THE R. U. V. COMPANY, INC.

The R. U. V. Company, Inc., will exhibit in booth No. 421 their quartz mercury vapor lamp and their Ultra Violet Ray Laboratory Outfit, using this lamp as the source of Ultra Violet Rays. This outfit for the production of Ultra Violet Rays has some new features in the electrical control of the lamp, and the lamp itself is of a great deal of interest in showing the latest and most adaptable source of this form of light. Ultra Violet Rays have been proven to be exceptionally satisfactory in testing dyed samples for fastness to light, and an inspection of this outfit by consumers of dyestuffs should be interesting from this angle. The exhibit will be in charge of Mr. Ricord.

STERLING COLOR COMPANY

The exhibit of the Sterling Color Company will occupy booths Nos. 565 and 566. The products shown are Direct Fast Cotton Colors applicable to cotton and mixed goods where fastness to perspiration, acids, alkalies and other reagents are required. Sulphur Khaki for Government work will also be shown. These colors are the products of the Peerless Color Company, Bound Brook, N. J. One of their first efforts was Primuline, a fast red for cotton and silk. The exhibit will be in charge of Messrs. A. L. Benkert, Thos. F. Sullivan and A. Mainland.

DYE PRODUCTS & CHEMICAL CO., INC.

The exhibit of the Dyé Products & Chemical Company, Inc., will consist of a display of dyestuffs and intermediates manufactured by this concern at their plant in Newark, N. J. A feature of the exhibit will be a display of the intermediates used for the manufacture of khaki dyestuffs for the United States Government uniforms, showing the various steps necessary in the manufacture of these materials.

The exhibit will be in charge of Messrs. Sidney Simon, L. M. Lowenthal and Clarence K. Simon.

THE WARNER CHEMICAL COMPANY

The Warner Chemical Company, in conjunction with the Warner-Klipstein Chemical Company, will occupy booths Nos. 561-2-3. The exhibit will include products of both concerns, which are composed principally of various choline products used medicinally and for military purposes, and phosphates of soda, which are used for the medical trade and for food products. There will also be shown the Nelson Electrolytic Cell, which was designed and perfected by the Warner Company for the manufacture of chlorine gas and caustic soda from common salt.

HELLENIC CHEMICAL & COLOR CO., INC.

The exhibit of the Hellenic Chemical & Color Company, Inc., will consist of both imported and domestic dyes, dry colors and chemicals handled by this concern. Dyes of various types for all materials will be shown.

FAST AMERICAN DYES ARE HERE

An interesting announcement appearing in connection with the coming Chemical Show is that from the National Aniline & Chemical Company, Inc., that it is now producing in limited quantities two most important fast colors for which the textile industry has been waiting, namely, Alizarine Sapphire and Carbanthrene Blue. Alizarine Sapphire is the fastest known level acid dye to light for wool, and Carbanthrene Blue a vat dye of the greatest fastness to washing for cotton.

Alizarine Sapphire, because of this fastness, will find extensive application on women's dress goods as a component color in such fashionable shades as *Taupe*, *Bear*, *Rodent*, etc. These are the shades which have occasioned most of the complaints received by the department stores and other retailers, since the blue that was used in making these shades faded more rapidly than the other colors of the compounds. Now, however, it is only a question of time until Alizarine Sapphire will replace the blue now being used on the higher grade of goods. This dyestuff

also is used extensively as a straight blue shade on all work that requires extreme fastness to light, notably flags.

Carbanthrene Blue, as stated above, is extremely fast to washing when applied to cotton. It will not fade under even the most vigorous laundry methods. It is almost impossible to remove this color once it is properly applied.

The importance attached to these two colors is shown by the fact that the National Aniline & Chemical Company has already spent several hundred thousands of dollars in research work and plant investment. The introduction of these types, together with *Indigo* and *Alizarine*, already announced, and some twenty other fast colors already largely produced by this company, means that every reasonable demand for fast colors has been met. In 1918 these two products will be available in large quantities.

Karl Feldman, of the Berlin Aniline Works, has been interned at Fort Oglethorpe, Ga., because of his pro-German activities.

AMERICAN DYESTUFF REPORTER

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 butions appreciated

A. P. HOWES, Editor and Publisher

GREETINGS AND CONGRATULATIONS

On this, the occasion of the Fourth National Exposition of Chemical Industries, the **AMERICAN DYESTUFF REPORTER** wishes to extend to all members of and associates in the dyestuff industry a cordial greeting. This is a time for mutual congratulations. The way has been long, the path none too smooth, and the end is not yet; but at least we are in sight of the goal. Many obstacles remain to be overcome, but the achievements of the past four years make it certain that they will be met and vanquished with characteristic American energy and thoroughness.

Four years of arduous labor on the part of our dyestuff chemists and those who have so courageously and indefatigably supported their efforts have developed in this country a dyestuff industry second to none in the world. As a dyestuff-producing nation we were, four years ago, at the bottom of the list of great world powers. Even the Teuton at the heyday of his success never included within his borders a dyestuff industry equal in money value to that of our own to-day. According to the latest Government figures, we are to-day exporting more dyestuffs in value than we ever imported from Germany--this in addition to supplying nine-tenths or more of our own domestic consumption.

It is true that we have not as yet produced all, or in fact any very considerable percentage, of the rarer and more difficult colors that were formerly pro-

duced in Germany, but our failure to so produce them has been owing more to the restrictions on necessary basic products for war purposes than to inability on the part of our chemists to surmount the obstacles in the way of their production. Each succeeding week sees new colors added to the list, and there is now no question that within a reasonable period of time we shall be able to produce in this country, entirely independent of any foreign assistance, colors of all classes, equal in every respect to those for which we were wont to depend upon the Germans.

It is, indeed, a remarkable achievement. Those who shake their heads and voice a doubt as to the permanency of the American industry--and there are still many of them--can no longer be taken seriously. The many millions of invested capital, the high standing of the individuals and firms engaged, and last, but not least, the remarkable resource and perseverance of American chemists, insures beyond the question of a doubt the ultimate permanent establishment in this country of a dyestuff industry second to none other in the world.

GERMAN ACTIVITIES IN THE DYESTUFF FIELD

Repeatedly in these columns we have warned against those who, posing as loyal Americans, are in reality "camouflaged" enemies. Unfortunately, the dyestuff industry has more than its share of persons of this class. We are, personally, firmly convinced--although we lack proof--that some of our most prominent manufacturers of and dealers in dyestuffs have Teutonic souls. We esteem it the highest mission of this magazine to search for and turn the light of publicity upon all such traitors. Those of our friends who can assist us in this work by giving us their suspicions, or, better yet, concrete proof, of Teutonic activity in the dyestuff field, will incur our deepest gratitude, and through them we may be able to be of very real service to the American dyestuff industry.

FAST COLORS ON WOOLEN CLOTHS WITH AMERICAN DYES

THE term "fast colors" is relative, no color being absolutely permanent. Therefore a color may be said to be fast when it does not change materially during the useful existence of the material that has been colored. Colored wool being used chiefly in the manufacture of wearing apparel, as far as the lay public is concerned, is dyed fast when the color does not fade materially during the life of the garment, does not rub off or smut, and withstands the necessary cleansing processes. The manufacturer must not only have the color of his finished goods of a satisfactory fastness; he must also have a color that will withstand the manufacturing process to which the wool is subjected in making a finished fabric. Therefore a dyestuff may be used to produce a fast color on cloth that should not be used for coloring loose wool, slubbing or yarn, unless it produces a color fast to scouring and fulling.

In selecting a dye a dyer must take into consideration what stage of manufacture the wool is in when the dye is to be applied, as well as what the finished fabric is to be used for. The dyer is also governed to a certain extent in the choice of dyestuffs by the fact as to whether they will dye level or not. A given dye may be sufficiently level for dyeing raw wool or slubbing, but not suitable for piece dyeing. Hence a dye is not always suitable for a given purpose, even if it possesses the required properties of fastness. The method of application and the care taken in carrying out the process affect the fastness of the color more or less. The proper preparation of the material before dyeing is also essential in the production of fast colors.

FAST COLORS ON LOOSE WOOL

Wool colored in the loose state usually has to be subjected to scouring and fulling before the fabric is finished, consequently dyes used for this purpose must be fast in this respect, the degree

of fastness necessary depending on the severity of the process.

Blacks.—Fast blacks are best dyed on loose wool, by the afterchromed method, and at least two good dyes are available for this purpose, viz: Buffalo chrome black 2 B N, and Ammaco chrome black B N, the latter being of somewhat better fastness in some respects, especially to potting, although both are exceedingly good as regards general fastness.

A very satisfactory method of application is as follows: Per 100 pounds wool 5 to 6 pounds of color, 5 pounds acetic acid, 10 pounds Glaubers salt. Start dyeing at 100 deg. Fahr., raise the temperature to a boil, boil three-quarters of an hour; add 1 pound sulphuric acid (in the case of Ammaco chrome black B N a little more than this amount of acid may be required), and boil fifteen minutes longer; run off one-third of the liquor, fill up with cold water and then add 1½ to 2 pounds bichromate of soda. Raise the temperature again to a boil keep at a weak boil for one-half hour.

In the case of Buffalo chrome black 2 B N, if too much sulphuric acid or bichromate of soda is used, or the boiling is too long and severe after the bichromate of soda has been added, the shade of black obtained is likely to be brownish or rusty.

Blues.—Rich navy blues of fair fastness can be obtained with Ammaco chrome blue 3 R Y N, and Ammaco chrome blue G N. These colors are best applied on a mordant of bichromate of soda and tartar, dyeing with the addition of acetate of ammonia to the dyebath; start the dyeing at a low temperature, raise gradually to a boil and boil one to one and one-quarter hours.

A blue of still better fastness can be produced with Ammaco chrome blue B double, applied as above, or by the top-chrome method, shaded with a small amount of acid violet 4 B S. This lat-

ter color should only be used in small quantities as a shading product, as the fastness to light is only moderate. In this particular case, however, the combination of Ammaco chrome blue B double with a small amount of acid violet 4 B S produces a color of exceedingly good fastness to light, as the violet when it fades turns redder, which is offset by the blue, which fades towards the green.

Another blue coloring matter suitable for dyeing wool is Buffalo cyanone 3 R, the application of which is more simple than the above mentioned blues dyes, it being dyed with the addition of acetate of ammonia and either with or without the addition of a small amount of bichromate of soda to the bath. The color obtained possesses good fastness to light, scouring and fulling, but is not fast to steaming and decatizing, and should not be used where these requirements are necessary.

Greens.—A fast green can be dyed on loose wool with serichrome green B applied by the afterchromed method, shaded if necessary with Alizarol yellow 3 G, or Ammaco chrome yellow G W. If fastness to fulling against white cotton is not required, Erie green M T may be used. Fast bright greens are not yet obtainable.

Yellows.—There are several makes of yellow dyes which produce colors of satisfactory fastness.

Reds.—Alizarine is now being made in fairly large quantities, and a very fast Bordeaux shade can be dyed with same on a chrome mordant; on a sulphate of alumina mordant, a fast red. Bright reds of fair fastness are dyed with cloth red R, cloth red B, Erie red 4 B conc. This latter color stains white cotton on fulling.

Browns and the Government olive

drab are being satisfactorily produced with combinations of chrome brown M W, Alizarol G W, Ammaco chrome black B N, or Ammaco chrome blue B double. The fastest results are obtained with this combination when dyed by the top-chrome process.

FORMULA FOR OLIVE DRAB

The following formula is being largely used for the production of the Government olive drab: Per 100 pounds wool 18 ounces Ammaco chrome yellow G W, 7 ounces Ammaco chrome black B N, 7 ounces Alizarol brown R B, 5 pounds acetate of ammonia. Start dyeing at 100 deg. Fahr., raise temperature to a boil, boil one-half hour; add 2 pounds acetate acid and boil fifteen minutes longer. Add $\frac{1}{2}$ pound sulphuric acid; boil fifteen minutes longer. Then add 1 pound of bichromate of soda and boil one-half hour longer.

SLUBBING AND YARNS

All of the above mentioned dyes are suitable for dyeing slubbing, although for dyeing this material in a circulating machine with Ammaco chrome blue 3 R Y N and Ammaco chrome blue G N, the color should be dissolved with a little ammonia and added from as dilute a solution as possible.

Worsted and woolen yarns can also be dyed with the same coloring matters. In the case of carpet yarns a greater variety of fast shades is obtainable, as the chief requirement is fastness to light, although colors that are fast to street dust and mild alkaline sponging are desirable. Woolen and worsted carpet yarns are usually dyed in this country with acid colors, although for special work where extreme fastness to light, alkaline street dust, and even in some cases cleaning with a strong soap solution are required, chrome colors are used.

The following acid dyes, which are suitable for carpet yarn, produce colors of good fastness to light: Buffalo black N B R, Ammaco acid green M, crystal orange 2 G, Buffalo fast crimson R, croceine scarlet M O O, brilliant scarlet 3 R, wool yellow extra conc.

The dye that is lacking and needed

badly by carpet and rug makers, as well as by the woolen piece dyers, is a blue of the alizarine blue S A P type. It is expected that a color of this nature will be on the market in the near future.

The dyeing of fast colors on woolen or worsted piece goods in some respects, especially as regards level shades, is more difficult than dyeing loose wool or yarns. On the other hand, the dyer has a greater variety of dyes to choose from, as those may be used which are fast to light but do not possess special fastness to scouring or fulling.

Fast medium and dark shades are satisfactorily obtained on woolen or worsted piece goods with the chrome colors mentioned above. Light shades being more difficult to dye level, are best dyed with a combination of Alizarol brown R B, Ammaco chrome yellow G W, Ammaco chrome blue B double, either by the top-chrome method or on a chrome mordant.

ONE-BATH METHOD

Another satisfactory way to dye light shades with chrome colors is by the so-called one-bath method; that is, by adding directly to the bath the bichromate of soda, or neutral chromate of soda, and acetate of ammonia immediately after the color solution has been added. The following combination works satisfactorily by this method: Alizarol brown R B, Alizarine red B W, Ammaco chrome yellow G W, Buffalo chrome black 2 B N.

Ladies' dress goods, flannels and broadcloths are usually dyed with acid color. Medium and dark shades of fair

fastness are obtainable with this class of dyes. Fast light mode shades similar to the popular "taupe" cannot be produced, owing to the lack of a fast level dyeing acid blue. As soon as this type of color is available shades of this description can easily be dyed, as a fast yellow and red, the other components of such shades, are now to be had.

Blue serges for ladies' dress goods are of better fastness than most of those dyed previously with German dyes, as they are now dyed with chrome colors and other fast-to-light colors, where formerly acid colors of only moderate fastness were very often used.

Worsted piece goods containing silk effect threads have in both ladies' and men's wear been more or less popular the last several years. This class of goods can be dyed in a full line of shades fast to light, and the equal in every respect to those formerly produced with German dyes.

The addition at the works of the Westmoreland Chemical & Color Company, Twenty-second Street and Allegheny Avenue, Philadelphia, Pa., will be equipped for the dyeing of khaki for the Government. The structure will be two stories, about 25 x 40 feet.

The Sunbeam Chemical Company, West Fifteenth Street, Chicago, Ill., has commenced the erection of a new works at Cable, Wis. The plant will include a main factory, about 75 x 300 feet, boiler house and other structures.

STEAM ECONOMY IN LOGWOOD BLACK AND KHAKI

By A. ATTWOOD

THE coal question becomes more and more serious, and correspondingly steam economy becomes increasingly of importance. We are afraid that the argument of the pocket has not hitherto had as much effect as might have been expected, because it has been countered by a rise in prices. Also, up to now, supplies of coal have met requirements. If supplies, even at a price, are going to be unavailable to meet customary requirements, then we shall see the economy campaign pursued with ardor. Efforts will be turned in a new direction. In place of endeavors having for object an increased price to cover increased cost, there will be an attempt to make less coal do as much, or even more, work than previously.

It is certain that much waste of steam is going on. There is present-day practice where every lot is done in fresh liquor—even every chroming—and where the proportion of liquor is up to 4 gallons per pound of wool. Anything over 1 gallon per pound should be considered inefficiency. By this we mean that in the actual dyeing operation there should not be more than 1 gallon to the pound. If the liquors are used over again, with just a little added each time to allow for what the wool absorbs, the final proportion should be less than 1 pint. No definite figures can be given, because the classes of wool vary so extremely, but we have known 1,300 pounds of strong English wool dyed khaki in 500 gallons of water. Of fine botany wool between 700 pounds and 800 pounds could be done in the same quantity of water—or even less. Logwood black can also be dyed level in these proportions. We hazard a conjecture that many dyers could not say off-hand what proportions they employ.

A measuring-up of all machines would be a first step in tackling the problem of bringing proportions down, and we fancy that any firm with a fair number of machines would find a surprising discrepancy in the different capacities. Machines that look about alike and are treated as of equal size may easily vary by 100 gallons in their liquor content.

PRESENT OPPORTUNITY

The present is, in one sense, a good time for experimenting, because trade is considerably simplified and customers' crotchets are not so important as once upon a time. On the other hand, new machinery is hard to get; simple and cheap modifications of plant are easier to arrange. At any rate, methods of dyeing can be experimented with. Khaki and black form the bulk of work at the moment. It may seem impossible to suggest great improvements in these. Logwood black especially—a centuries-old dye—ought by now to have got to the height of efficiency in its dyeing procedure. Yet we hope our remarks may show that the limit of improvement has not been reached.

Khaki is being dyed by three main methods. The first may be described as one bath, one stage. Color and chrome are added together, the bath is heated to the boil gradually and kept boiling one hour or thereabouts, when the operation ought to be complete.

The second process is one bath, two stages. Color and acid are added first, and after an hour's boil chrome is added. This takes a little longer than the first process, but not much; and it generally compares very favorably in cost of dyewares. This is because exhaustion is better.

The third process is a two-bath method. The wool is first chromed,

then washed off and dyed up in a separate bath. This is used chiefly when fustic forms the main body of the khaki shade. It was also used in the early days of the war because it admitted of the employment of logwood for shading purposes. The gradual increase in price of fustic and the prohibition of logwood for khaki have caused this third process to diminish in importance.

Logwood black is essentially a two-bath dyeing. One-bath methods are only of laboratory interest. We do not know of any firm dyeing logwood black in one bath on the large scale. Whatever economy of steam and time could be shown is far overbalanced by the extra dyestuff needed, the poorer result as regards rubbing and the liability of the bath going wrong.

We will discuss logwood black dyeing first. The following is in actual practice to-day:

1. Chrome.
2. Let off and wash off.
3. Take out of the chroming vessel and enter into a logwood liquor in another vessel. Set to boil and boil one hour.
4. Let off and wash off.

It will be noticed that both chrome and dye liquor are only used once. The procedure is adopted for loose wool when dyed by hand in open becks. The liquor will probably work out at 4 gallons per pound. The waste of steam is enormous. The only set-off against it is that the vigorous boiling exhausts the liquors very well.

HANK DYEING

When the wool is in hank form—either stripping or yarn—it can be lifted out each time. The chrome

liquor and logwood liquor only require a few gallons for replenishing purposes each time. The steam economy is thus rather good, and compares with much machine practice. The first time a liquor is used it shows a high proportion of the wool, but at the day's end, or whenever it is let down the drain, after anything from six to ten panfuls have been dyed in it, it shows up quite respectable. Figures like the following may be taken as a sample, but, of course, open pan work varies tremendously in sizes of pans, weight per panful and quantity of wool.

| | |
|---|-----------|
| Average weight of wool per | |
| panful | 140 lb. |
| First panful | 600 gal. |
| Second to tenth panful, | |
| each | 50 gal. |
| (To replenish what the wool takes out.) | |
| Ten panfuls | 1,400 lb. |
| Water, 600 gal. + $9 \times 50 =$ | 1,400 lb. |
| Or about 1 gal. to 1 lb. | |

As some discount to this, it must be remembered that open pans expose a large surface to the air, and the actual dyeing temperature is well under the boil, the result not being quite so clean. Where hand methods fail with this form of material, is more in other aspects. The material, for instance, cannot be boiled while in the liquor, or it will felt and mat. Because of this, the exhaustion is not as good. There is not much loss of chrome or logwood, because what is left in one liquor goes towards the next, but the goods are not dyed quite so fast and clean. Then again, the turnout is not as large as with a machine. The economic difference is not so great as might be imagined. Repairs, renewals and depreciation take a great deal of discount from machinery, and compared with other branches of the textile trade the machinery of the dyeing branch has not made hand work look quite so foolish.

Except for the labor economy resulting from the dyeing of large

weights at once, there is a good deal of machine practice that otherwise displays very little economy. It is usually possible to give the wool a good boil in machines, so that results are cleaner than open pan work, where it is not possible to keep steam on during the dyeing. No machine, of course, ought to be without re-

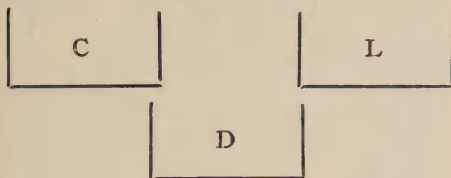


Fig. 1

serve tanks, though it is a rule with sadly too many breaches in its observance. But what we specially wish to point out is that the ordinary method of utilizing reserve tanks is not as efficient in steam saving as is usually thought to be the case. Compared, for instance, with the hand method of dyeing tanks, as previously described, it does not show a striking superiority. Startling as this may be, we think a little thought will demonstrate this surprising contention.

Let Fig. 1 be a conventional drawing of a dyeing machine D, with two reserve tanks C and L (used for chrome and logwood liquor respectively). For the purpose of our argument it does not much matter what type of dyeing machine is represented at D. Procedure is as follows: While the machine is being filled with wool, loose or in the top or ruled into hank, just as the case may be, the reserve tank C is filled with water and boiled and the requisite amount of chrome added. When ready the liquor in C is let down into D, which, of course, is cold. The boiling liquor from C parts with some heat to D, and if the machine is embedded in the floor the surrounding earth also is warmed up. In the result the temperature of the chrome solution falls from 212 deg. Fahr. to, say, 180 deg.

Steam is turned on, and the boiling point will be reached in perhaps a

quarter of an hour—or maybe half an hour. Whatever it takes in steam and time gives a rough measure of the loss of heat and the cost of replacing it. After boiling one hour the chrome liquor will be pumped back. But tank C has been cooling for over one hour, and some of the heat which we are trying to save, stored up in the liquor, is spent in heating the reserve tank up again.

Having pumped all the chrome liquor out of D, the next thing is to wash off. This is done with cold water. The chroming had heated the dyeing machine and a good deal of its surroundings. Now we cool it again. Meanwhile the logwood solution in the reserve tank L is ready boiled, and when the wool is washed off the dye liquor is let down. Some of its heat is at once used—perhaps we might say wasted—in warming up the machine D and its surroundings again. Another quarter or half hour will be necessary to bring the cooled liquor back to the boil. Boiling then proceeds for another hour or so, and the liquor is pumped up into tank L. This tank has in the meantime been cooling, and at once robs the pumped-up liquor of some of its heat.

The dyed material is ready for removal from the machine, but it is too hot to handle, so it is washed off again with cold water, whereby the machine and its setting are again cooled down. Then it is emptied and filled. Things are now ready for chroming again, but note that for the past two or two and one-half

hours the tank C has been radiating heat, and before the liquor in it is ready to be let down into the machine it will require more steam to heat it again.

Also from now onward through the chroming process the reserve tank L is losing heat. In fact, when one looks at it with hypercritical observation the whole thing is an in-



Fig. 2

genious arrangement for dissipating heat. From the steam consumption point of view the chief recommendation will probably lie in the small proportion of water to wool. Otherwise the method is evidently susceptible of great improvement.

One way of getting better results is to let the two reserve tanks serve for two dyeing machines. Luckily, logwood black is done in such quantities that it should be generally possible to work two machines together in the manner about to be described. The references are to Fig. 2.

The chrome liquor is boiled up in tank marked C and let down into D. When finished with here it is pumped straight into H, which must, of course, be ready for it. While chroming is proceeding in H, the lot in D is washed off and dyed with logwood solution which has been prepared in L. When the chroming in H is finished the liquor is pumped up into C, and the wool washed off. Dyeing in D has been continued up to this moment, and the logwood liquor is now pumped across into H. The material in D is washed off and the machine emptied and filled. The chrome liquor in C is let down into D, and the cycle of operations is repeated.

This arrangement does certainly save some steam. If all goes like clockwork the time spent by boiling liquors in the reserve tanks may be reduced by as much as 75 per cent.

The way to adopt an existing plant so as to be worked as described will vary according to circumstances. A pipe may be made to connect directly the two pumping-up pipes. Valves will have to be put in above the two junctions so that the liquor can be stopped from going forward (upward) into the tank. This would make the most direct path and so save most heat. Another way is to have a let-off pipe to each machine from each reserve tank. The liquor would then first enter the tank and immediately flow out to the other machine. If tanks C and L are close together and the pumping-up pipe goes above them, an elbow joint would allow either to be filled and also by means of a movable pipe with a funnel top the liquor need not go into either of the tanks, but directly back into whichever machine it was wanted for.—*Dyer and Calico Printer.*

(To be concluded)

THE FOURTH LIBERTY LOAN

This week sees the beginning of a campaign for the Fourth Liberty Loan—the greatest loan which any nation has ever attempted to float. The dyestuff industry should take upon itself a major part in assuring the success of this flotation. Our Government has done much for the industry, and we hope it may do more. The time will come in the not-far-distant future when Government assistance of various kinds will be, if not absolutely essential, at least extremely important to our dyestuff manufacturers. Let us then put ourselves in the position of having supported the Government most loyally in its endeavors, to the end that we may reasonably ask for reciprocal favors.

The September issue of *The Barrett Trail*, published by the Barrett Company, bristles with illustrations and is full of snappy sketches about Barrett men at the front and in the camps in the United States. Additions to the company's long roll of honor since July 20 are printed.

Important Chemicals Utilized in Bleaching, Dyeing, and Calico Printing, Thickenings, etc.

PART IV

THE tannins which are most important in the dye house are the following: Tannic acid, or gallo-tannic acid, which is found in many parts of plants holding tannin, particularly gall nuts, and in the pure sumac, and is obtained principally from the gall nuts in Eastern Asia, which are very rich in tannic acid. It is sold in the form of a light colored powder, or of yellowish to brownish scales, or, again, as a brittle glassy substance of the same coloration, or as a foamy mass. When exposed to the air it gradually becomes darker. It dissolves in six times its weight of cold water, and more easily so in hot water; in dilute alcohol, dilute acetic acid, or glycerine it dissolves very freely. The aqueous solution decomposes gradually when left standing. Alkaline solutions become strongly discolored. The better kinds of commercial tannic acid contain about 65-85 per cent tannin; the well-known brand of foaming tannic acid is almost chemically pure. Good tannic acid yields a clear solution in water, and on being reduced to ashes leaves but little residue. There are, however, very good qualities on the market which do not yield a perfectly clear solution in water. Pure gallo-tannic acid yields a clear solution in a mixture of equal parts of alcohol and ether, while most of the impurities and adulterations, gallic acid excepted, are not dissolved thereby. Gall nuts, or gallo, are ball-shaped abnormal growths caused by the sting of insects when depositing their eggs. They should be collected before they have been pierced by the young insect. Of the oak-gall nuts the green or black Aleppo and Levante gall nuts are the best, which contain about 5-60 per cent gallo-tannic acid. The Hungarian, Italian, French and German gall nuts are very much poorer in tannic acid. The Chinese and Japanese galls are very important, and contain up to

about 80 per cent gallo-tannic acid, and are used principally for the manufacture of pure tannic acid. Knopperrn are gall nuts from an oak growing in Austria which contain only 25-35 per cent gallo-tannic acid, and are not much used in the dye house. Sumac is, next to pure tannic acid, the tannin most generally used in cotton dyeing. The sumac obtained from *Rhus coriaria* is the best, and contains gallo tannic acid. The finest quality, and at the same time the least colored, is the Sicilian sumac; next to it comes American sumac, which has gained greatly in quality during the last few years, as well as the Greek, Spanish and Portuguese sumac. Of less value are the sumacs from *coriaria myrtifolia*, and *rhus colinus* obtained in Hungary, the Tyrol and Provence. Commercial sumac usually consists of the whole broken up, or sometimes powdered leaves of the plant; the stalks of the leaves are very often mixed up with the rest. The good kinds have an olive-green color, and a fresh agreeable smell; they contain 15-20 per cent, even sometimes more than 20 per cent tannin. Sumacs which are dull in color, and have a musty smell, have deteriorated by moisture and too long storing. Sumac is used principally as a tannin for dark shades. The dull red color which the sumac contains usually interferes rather with light and brilliant shades.

Sumac extract is marketed as a thick, dark brown liquid of about 52 deg. Tw., or in a solid state. Decolorized sumac extracts may, as a rule, replace the tannic acid even for bright shades. Liquid sumac extract is rather disposed to ferment, losing thereby in strength. Myrabolans are the fruit of various Chinese and East Indian plants, which are sold in a dry state, and ground down to powder. They contain about 25-45 per cent ellagitannic acid, and also a yellow brown dyestuff. In cotton dyeing it is

sometimes used for dyeing the warp black in half wool pieces, and for covering noils.

Valonics are the acorn cups of certain species of oak growing on the Mediterranean coast, which contains 25-35 per cent tannin, probably gallo-tannic acid, as well as a dirty colored yellow dyestuff. They are sometimes employed similarly to myrabolans. Divi-Divi, or Libi-Divi, are the pods of certain plants growing in Central and South America which contain about 19-35 per cent ellagitannic acid, and are used in the same manner as myrabolans. The above-named tannins, as also several others, are employed largely for dyeing cotton, and for weighting silk, more particularly black silk.

The value of the tannins varies a great deal, according to the amount of tannic acid they contain. It is immaterial in estimating their value whether they contain gallo-tannins or ellagitannic acid. For many purposes the amount of dirty dyestuff contained in the tannins is likewise a consideration. When stored for a long time, principally in damp, close places, the tannins are deteriorated through the decomposition of the tannic acid. The value of the tannins is best determined by an exact titration with permanganate, and by making dye tests. For testing by dyeing, dissolve carefully weighed quantities of the tannin to be tested and of that with which it is to be compared (of pure tannic acid about 0.3 grams), in hot water. Fill up with water up to 250 c.c., add 10 grams common salt and 2½ c.c. glacial acetic acid (or about 5 c.c.

good acetic acid in each vessel, and mordant therein 10 grams of cotton yarn previously well boiled for three hours, the liquid meanwhile being allowed to cool off; then wring off each hank by itself, without, however, rinsing, and turn them in a glass containing 200 c.c. nitrate of pyrolignite of iron of 1½-3 deg. Tw. for fifteen to twenty minutes; rinse and dry. The strength of the tannin is then determined from the depth of the shade of the cotton. In order to determine how the material is suited for light shades fix it with antimony instead of iron salts, and dye with basic colors; for instance, new methylene blue G. G., or irisamine G.; it will then be found that one tannin is sometimes more suited for blue and another more for red shades.

Dextrine is prepared by heating starch, chiefly potato starch, with dilute acid, and is sold as white and yellow dextrine. White dextrine contains a good deal of the original starch in an unchanged condition; yellow dextrine, on the other hand, only very little of it. Both kinds, further, contain grape sugar, and are sometimes also adulterated with sand, gypsum, etc. The amount of starch is determined in dextrine by dissolving it in cold water, and ascertaining the weight of the residue, deducting the weight of any ash that may be found on igniting. The various other kinds of burnt starches are tested in the same manner. Good dextrine is not hygroscopical, dissolves in cold water with but little residue, and must not react acid. Dextrine possesses only one-fifth to one-sixth the thickening

power of wheat starch, but, on the other hand, the print pastes prepared with it are much smother than those of wheat starch. The value of starch is determined by the stability and thickening property of the paste. Its thickening power and finishing properties are determined comparatively by practical tests. Insoluble mineral, and other impurities are recognized if the starch is liquefied with diastase, in which case such impurities remain undissolved. By treatment with dilute acids, or by heating to 200-260 deg. C. (400 to 500 deg. Fahr.) starch is converted into dextrine. By the addition of diastase (malt diastase) it is turned into dextrine and maltose. Through the action of caustic soda lye it is converted into apparatine, which is sometimes used with good results for thickenings, but more particularly for finishing sizes. For the production of thickenings the starch is stirred to a paste with a little water, the remainder of the water being then added, and the solution gradually brought to the boil, and boiled for fifteen to twenty minutes. If the boiling is continued too long the starch paste will become thinner again and lose its thickening power.

Of the different kinds of starch wheat starch is the most largely used as a thickener. It possesses very strong thickening power, and the print colors prepared therewith penetrate the material well. Wheat starch, it should be noted, must be free from bran, which is very apt to block the engravings. Bran may be detected by stirring the finely ground starch to a thin, even milky fluid and passing through a very fine silken sieve; the bran will then remain in the sieve. Maize starch possesses still greater thickening power than wheat starch, but does not keep so well. Although especially well suited for alkaline print pastes and discharge colors, it is principally used for finishing. Rice starch is sometimes used as a thickener for print colors for flannelettes, but its principal application is for finishing purposes. The paste prepared from rice starch absorbs water readily, and it is nearly always sold free from any sand. Potato starch

is employed principally as a cheap substitute for the already named qualities of starch for finishing purposes. It is but little suited for thickening print colors. Flour, particularly wheat flour, is at times employed as a thickener either by itself or in combination with wheat starch. It is particularly well suited for the thickening of ice colors (paranitraniline red), and is further used in the printing of wool yarn. Thickenings prepared with flour do not keep as well as pure starch thickenings. The flour must be as finely sifted as possible, and free from any bran or mineral substance; it must, further, not be damp so as to conglomerate when pressed in the hand. It is tested for its thickening power and stability in the same manner as starch. Burnt starch is obtained by roasting, by which process the insoluble starch is partially converted into soluble dextrine. The various sorts are paler or darker, according to the degree of roasting to which they have been submitted. The quality of burnt starch is determined by its color and thickening power as well as the percentage of water it contains, which should not exceed 4 per cent.

British gum is burnt maize starch, and is sold in the form of a yellowish or brownish powder. It is an excellent thickener, and can, in many cases, be used as a substitute for the more expensive ordinary gums. The colors produced by it level very well. British gum is also very well suited for chlorate discharges and reserves, both for the Prud-homme style and for colors requiring a caustic soda discharge.

Leiogomme is roasted potato starch, and it is admirably adapted for strong caustic print colors.

For thickening properties and beauty of the colors produced with it, gum is best tested comparatively and colors thickened with gum yield very fine level prints, but of a considerably lighter shade than when using starch as a thickener. Gum is therefore employed more especially for printing light colors in large patterns. Crystal gum, slab, Indian gum, and gomme, labiche, etc., are excellent substitutes for the ordinary gum (arabic, senegal, etc.). They are easily soluble in water, and possess great thickening power. They are generally dissolved with their own weight of warm water, but may be diluted considerably more. Owing to their efficiency they are very economical. For very delicate shades only they are less suited than the ordinary gums, because the colors mostly turn out somewhat duller than when using senegal gum, etc. They are free from any kind of hard insoluble impurities, and they are tested by comparative print tests.

Gum tragacanth, or gum dragon, is obtained from different kinds of astragalus, and is sold either in form of flat yellowish white pieces, as leaf tragacanth, or in a bent worm-like shape, as worm tragacanth.—*The Textile American*.

The United States Government is building a \$3,000,000 addition to the benzol distilling plant of the Barrett Company at Frankford, Pa., and will also build an additional power plant.

SKILL AND CARE REQUIRED IN YARN DYEING

Some of the problems met with in wool dyeing which illustrate the delicacy of handling often required are discussed in an article in the *Textile Colorist*, which is herewith reproduced from that journal.

From the Chinese point of view the dye is one of the most important considerations in the making of a rug. In western China we find that the craftsman whose family has doubtless been in the business for generations takes a greater pride in the production of a certain color than do the newly established rug men in Peking and vicinity. "Ninghsia dyes never fade," is a saying in China. Yet the native dyes used in Peking, if properly set, will outlast the carpet. Providing the dyes does his work honestly, there is nothing that has yet been discovered that will bleach the rug without ruining the fabric. The rug can be boiled to shreds without affecting the dye in the least.

Before the war, when aniline dyes were much cheaper, some native rug men preferred to use aniline dyes because it simplified the process and was less expensive. The aniline-dyed product quickly fades and will not stand the washing process. There are still some aniline-dyed products to be found, and the native rug men occasionally foist one upon the unsuspecting tourist who has the temerity to buy without the advice of an expert.

Every rug maker dyes the yarn to

match the colors in the designs that are submitted. At one dyeing he must make enough to finish the rug, otherwise there is a variation in the color and the rug is streaked. The yarn is dyed in large iron caldrons, in which the dye is first made. The skilled dyer times his work just as a photographer times his photographic plate. The dye should never be wrung from the skein, as this results in uneven distribution. Sometimes it is rinsed several times in cold water before it is hung up to dry. The master hand knows the exact moment when the yarn has finished drying in the sun. The dye maker has no books or recipes, but memorizes all his formulas. There is generally displayed at some place in the shop a great number of small patterns showing all the different colors and tints of which that particular proprietor is master. When a rug maker receives an order for a rug, the whole supply of yarn to be used is dyed and set. It is then displayed pending the buyer's inspection before the weavers are set to work. If a particular shade is sought the dyer will experiment until the required tint has been found.

The old Chinese rug makers, although masters in the art of color making, confined themselves to a very limited number of colors. This has been followed to a certain extent by the moderns. In the use of blues and yellows the Chinese artisan doubtless stands pre-eminent. The use of the true imperial yellow is very rare, although an endless number of shades

in this color are designated imperial. The reds sometimes have a yellowish tinge or hue. There are many shades of salmon pink and reds, the salmon pink being produced from species of redwood grown in western China.

Minerals are scarcely if ever used. The dyers of Ninghsia, in Kansu, are famous for their beautiful shades of red. This color is produced from a berry grown in Kansu Province. Red is also produced from redwood. Madder (*Rubia cordifolia*) is a creeper whose stems and roots when ground and boiled produce a red that is used as the basis of many shades. It is also said that some of the old craftsmen occasionally use sheep's blood to produce a deep vermilion. Perhaps the best known red dye in China is the safflower (*Carthamus tinctorius*), called the red flower by the Chinese. The seed of this flower is said to have originally come from Turkestan.

Brown comes from the dye yam, or shu liang, as the Chinese call it. It produces a dark-brown color and is widely used in China in the dyeing of cloth. If a darker shade is desired gallnuts and alum are used. Acorn husks are sometimes used to produce this color.

Blue comes from the indigo plant. One of the many varieties which grow in China (*Polygonum tinctorium*) is grown in the northern provinces. The use of blue is rather a difficult and tedious process. If the work is carelessly done the blue does not go clear through and the yarn when woven into the rug and clipped

off shows a white spot in the center of the strand. A rug made up of such yarn is very unsatisfactory. Most of the blues used by the Chinese have indigo as their basis, and this in combination with other materials produces all the shades known.

Purple is obtained from hollyhocks and from the bark of *Lithospermum erythrorhizon*. The coloring matter is brightest if the plant is dug in early spring.

Yellow is obtained from the buds of a large tree known as *Sophora Japonica*, widely scattered over China. Locus seed also produces a yellow as well as an olive green. Some craftsmen first dye the yarn a fast yellow. When it is set it is dipped in red and exposed to the air for a very long period. As a result the red fades and the yellow remains, with just a blush of red that is very pleasing to the eye. Green dyes are obtained from *Rhamnus tinctoria* and other species of buckthorn. Indigo and yellow produce a green dye, but this color is very little used in Chinese rugs.

Black is obtained from gallnuts. when mixed with cochineal and other substances the powder from the galls produces gray, brown and fawn tints. Black is also obtained from pomegranate rind and vinegar.

NOTES OF THE TRADE

The Industrial Pitch & Tar Products Company, New York, has been incorporated with a capital of \$20,000 to manufacture chemicals, dyestuffs, etc. C. R. Paul, D. Miller and F. J. King, 455 Ninth Street, are the incorporators.

Austin & Co. have a contract for a two-story factory building at Marcus Hook, Pa., for the National Aniline Chemical Company, and F. W. Van Loon has a contract for 100 houses at Naaman, Del., for the same company.

The J. & R. Manufacturing Company, New York, has been incorporated with an active capital of \$33,000 to manufacture chemicals and dyestuffs. E. F. Randolph, G. L. Robinson and F. J. Byrne, 52 Broadway, are the incorporators.

Following the recent destruction by fire of the one-story plant of the Central Dyestuff & Chemical Company, at Plum Point Lane, Newark, N. J., this firm has had plans prepared for its reconstruction. The new structure will measure 54 x 80 feet.



AMERICAN DYESTUFF REPORTER

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America First!

Being Some Account of the
Chemical Exposition

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of Geo. H. Whaley

Buy Liberty Bonds!

AMERICAN DYESTUFF REPORTER

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"Circulated Everywhere Dyestuffs are Used"

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No. 14

AMERICA FIRST!

Important Dye Exhibits at the Chemical Exposition
Show the Above to Be a Slogan Now Made a Reality

WHILE the "always victorious and not-to-be-withstood" German armies, with fiendish cleverness, continued last week to "lure" the unsuspecting Allies in the general direction of Berlin, there was another sort of Prussian downfall being demonstrated in no uncertain manner at the Grand Central Palace, New York, through the medium of the Fourth National Exposition of Chemical Industries. The only difference between the two Allied triumphs was that one scored a military and the other a commercial victory. And every time you tear off another leaf from your desk calendar, each of these victories becomes more thoroughly decisive.

The progress of the development of our chemical industries in this country has kept pace with the progress of our armies afield. On the one hand, however, we receive almost hourly reports of the ground gained, while on the other such an event as the Chemical Show is required to throw our achievements into bold relief. In either case the real significance of these evidences of advancement lies in the fact that they demonstrate not so much the overthrow of tangible forces—though that alone were enough—but of an idea—the Prussian

idea of world domination, with utter disregard of the measures employed to attain it.

Kultur, because of and together with all the unwholesome, obscene tenets which have become associated with the Germanization of a perfectly decent word, is about to receive its death thrust at the hands of the Allies. For generations to come the name will embody within itself an odious flavor which no amount of purging will be able to eradicate while any memory remains of the cold, methodical horrors wrought in France and Belgium, and the unclean commercial methods practiced in the markets of the world. Yet, had it not been for the rude awakening which we received when the Hunnish hordes poured themselves out over the orderly little villages of these two countries like a great stain, obliterating happiness and decency, and showed us the true meaning of the principle, we might have drowsed along in blissful insecurity for years more, and not have tasted the triumphs visible on every hand at one of the most valuable and educational events in our entire category of public displays.

The "Big Show," with its glittering array of bottles, beakers and flasks, and their vari-colored contents, and its

steady drone of ponderous machinery in motion, has come and gone another time. To the casual visitor and to the veteran chemist alike it left a definite impression of progress. The exposition wore a distinctly military aspect this year, as was only natural, khaki and olive drab being much in evidence where dinner coats and full evening dress held sway the year before, and under cover of the light conversation and admiring comments there was evident a deep current of intense seriousness. But to one and all the event had but a single message: America has come into her own.

To the dye manufacturer and chemist, and to the mill people, the show had a peculiar significance and thrill probably experienced by no other class of attendants in such large proportions. Because of the fact that a new industry has been created in this country since the outbreak of the war—and a “key” industry, at that—any attempt to show in tangible form the progress of chemistry in the United States must of necessity devote a large share of its space to

coal-tar products. Hence, the show was distinctly a personal triumph for the dye man, and members of this fraternity who attended felt very much at home. The application of the “bull’s-eye” label to products made in this country since 1914 served to emphasize the vast strides made in this direction during the past four years.

In all there were fifty-two separate exhibits devoted to matters interesting to the dye people, and the showing made left little doubt in the minds of any as to our ability to call the German bluff. Of these, an attempt has been made to comment upon some of the more important booths displaying these products.

E. I. DU PONT DE NEMOURS & Co.

As regards the variety of exhibits, the du Pont booths on the main floor may be looked upon as the piece de resistance of the show. That portion of it devoted to dyestuffs proved to be a revelation, as probably less has been heard concerning the products of this company during the past year in proportion to its magnitude than any other. The purpose of the exhibits was primarily to emphasize the “peace products” of the company rather than the war products, and to overcome the tendency which most people still have to think of powder the minute the name du Pont is mentioned. It was pointed out, by means of an elaborate wall chart, that these products were all the logical exploitation of by-products of the explosives industry, which began back in 1802, and that the development over more than a century had not been a mere haphazard “mushroom growth,” but instead, a definite building up of a structure from its very foundations. And those who allowed themselves to be shown around the booth needed no further assurance that there were no bricks

missing. Some idea of the magnitude of the company's resources, all of which are to be devoted to keeping American mills supplied with American dyes, may be gained from the statement that out of 10,000 graduate chemists now in this country, more than 1,000 of them are in the employ of the du Ponts at the present time. The company now has somewhere in the neighborhood of \$10,000,000 invested in the dyestuff department of their enterprises, but this figure means little, for it is well known that it is prepared to spend any sum necessary in order to insure the permanence of the industry in this country. It was given out that the object of the concern was to build now for business after the war, when the huge plants making explosives will be devoted to the production of dyes, and consequently the du Pont Chemical Works may be regarded in the light of "an anchor to windward," so far as the industry is concerned, while the presence of these and several other firms with the same ideals is enough to constitute what is practically a guarantee that America shall not be robbed of the fruits of her victories.

THE NATIONAL ANILINE & CHEMICAL COMPANY, INC.

As was the case at the recent Textile Show, and subsequently in many of the large cities and department stores of this country, the exhibit of the National Aniline & Chemical Company, wherein was again shown the comparative exposure, scouring and fulling tests of American and German dyes, attracted widespread attention and much congratulatory comment. This publication has before taken occasion to call attention to the fact that probably no other single exhibit of this kind has done so much to present effectively the case of the American dye manufacturer to him whose good opinion is such a vital factor in the ultimate success of the industry—the man in the street—as has this one. In finding means of securing confidence in American dyes, the National Aniline & Chemical Company has held the lead, and its efforts in this direction may well be emulated

by others who desire their share in the future success of their products. Although preserved intact and presented in substantially the same form in which it has been touring the country, the exhibit has been further co-ordinated and rearranged with an eye to securing greater conciseness, until it now forms a clear, straight-from-the-shoulder refutation of German claims to superiority. The company's slogan that "type for type, each American dye is the equal of its German counterpart," was again much in evidence, and it is the wide dissemination of knowledge like this, unweakened by extravagant claims, which find little favor with the thinking public, which is having its effect upon the users of dyed fabrics—which is to say, the world and his wife. It is the intention of the company to continue the tour of this exhibit indefinitely. From an artistic standpoint, the booths of the company were extremely attractive to Her Highness, the American Woman, which, needless to remark, renders the display doubly valuable in securing an audience whose opinion

counts heavily. A large wall card revealed the fact that out of 180 new dyes manufactured in this country since the war, 106 were made by the National Aniline & Chemical Company, and of these, thirty-eight have not yet been produced by any other concern.

A. KLIPSTEIN & Co.

"Swiss dyes have formed a bridge over which we are now passing from German to American dyes," says a paragraph from a pamphlet describing the exhibit of A. Klipstein & Co. This, coupled with the fact that the Swiss part in preventing a complete dye famine in this country by enabling us to gain the necessary time to erect dye factories, is a logical reason for Swiss dye-makers to enjoy a reasonable share of the patronage of the American consumer, formed the thought behind the dye exhibit of this firm. The booth, which was in charge of E. H. Klipstein, proved attractive and interesting to both manufacturer and consumer, and aroused much admiration among the feminine visitors, which, as we have endeavored to point out before, is a good thing, for an exhibit can have no moral effect if it fails to gain an audience. The display included samples of colors made by E. C. Klipstein & Sons Company, the Bull's Ferry Chemical Company, and the Society of Chemical Industry in Basle, for all of whom this concern are the agents. Some of the Swiss dyes announced as available in this country were the following:

Cloth Fast Black B.
Chrome Fast Black (P W R L Concentrated).
Carbide Black E.
Cloth Fast Blue B.
New Fast Blue R S No. 4237.
Chrome Fast Cyanine G.

Direct Sky Blue Green Shade.
Pyrogene Direct Blue R L.
Pyrogene Indigo.
Bismarck Brown R.
Bismarck Brown Y.
Benzyl Green B.
Kiton Green N N.
Wool Green S (Blue Shade).
Pyrogene Green GG.
Pyrogene Dark Green B.
Kiton Fast Orange G R.
Acid Rhodamine R (Concentrated).
Acid Rhodamine 2 R.
Acid Rhodamine 3 R.
Benzyl Bordeaux B.
Rhodamine B.
Rhodamine B Extra (Concentrated).
Rhodamine 6 G L S.
Rhodamine 6 G L S (Concentrated).
Acid Violet 6 B N.
Benzyl Violet 5 B N.
Gallocyanide D H 7532 Paste.
Auramine O.
Auramine O K (Concentrated).
Auramine II.
Brilliant Phosphine 5 G.
Patent Phosphine G.
Patent Phosphine M.
Chrome Fast Yellow G.
Chrome Fast Yellow O.
Cotton Yellow C H.
Pyrogene Yellow O.
Pyrogene Yellow 3 R.
Ciba Grey B, Powder.
Ciba Gray B, 20 per cent Paste.
Ciba Gray G, Powder.
Ciba Grey G, 20 per cent Paste (very greenish tint).
Ciba Blue 2 B, Powder.
Ciba Blue 2 B, 51 per cent Paste (for dyeing).
Ciba Blue 2 B D, 16 per cent Paste (for printing).
Cibanone Olive B, Paste.
Ciba Red G, Powder.
Ciba Red G, 10 per cent Paste.
Ciba Red G, 50 per cent Paste.
Ciba Violet B, Powder.
Ciba Violet B, 50 per cent Paste (for printing).
Ciba Violet B, 50 per cent Paste, (for dyeing).
Cibanone Yellow R, 10 per cent Paste.

THE BARRETT COMPANY

The huge chart illustrating "what

comes from coal," which traces the progress of many synthetic colors, explosives, drugs, flavors, etc., through their crude and intermediate stages, was again in evidence and a dominating feature of the Barrett Company's booth this year. As before, it was constantly the center of an interested throng of spectators, who elbowed each other in an effort to unravel the intricacies which beset the path of the coal-tar chemist. The purpose of this exhibit was entirely educational, and it was designed to show what is being done to establish in this country a self-contained coal-tar chemical industry. The displays consisted principally of the bases and intermediates, appropriately labeled and arranged in logical order, while the chief thought which the demonstrators endeavored to leave in the minds of visitors to the booth was the fundamental importance of chemistry in the life of United States industries.

AMERICAN ANILINE PRODUCTS, INC.

The booth of this company was a veritable riot of color. Probably no more thoroughly striking exhibit could have been found, and the interest aroused was amply attested by the fact that those in charge of the booth found scarcely a minute to pause from the time the doors opened until the whistle blew each night. In one respect the exhibit was unique, in that although this concern is engaged in the business of manufacturing dyestuffs, not a single sample of dye was to be found anywhere in the booth. As B. R. Armour, president of the firm, explained, "It is our intention to demonstrate the practical results accomplished for the benefit of the mill man. Dye samples do not show this, and hence no bottles and jars are here. Instead, our space is devoted entirely to textiles and leathers actually dyed with our products, which, we believe, shows more strikingly the practical value of our colors." Prominent among the textiles displayed were samples of navy-blue serge, dyed with Alizarine

Navy Blue G, Alizarine Chrome Blue B and Alizarine Blue Black B. Olive drab felt, dyed with Alizarine Yellow 3 G, Alizarine Brown G and Alizarine Blue Black B, was also displayed, while a scarlet fabric for navy stripes dyed with Amacid Scarlet R R and Amacid Eosine attracted much favorable comment. Handbags and shoes of shark skin in shades of black and tan were likewise in evidence. The exhibit as a whole aroused the liveliest admiration among the feminine visitors and the "dyed-in-the-wool" dyers as well.

MARDEN, ORTH & HASTINGS COMPANY, INC.

The booths occupied by this company were attractive in the extreme and again demonstrated the progress of our chemists during the past year. The first objects to greet the eye of the visitor were the company's initials—the familiar "M. O. H."—done on a large scale in crystals of yellow prussiate of soda against a sky-blue

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AMERICAN DYESTUFF REPORTER

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the American Dyestuff Industry. Unbiased contri-
butions appreciated

A. P. HOWES, Editor and Publisher

THE CHEMICAL EXPOSITION

There is no doubt that the dyestuff exhibits shown at the Chemical Show last week were far more impressive than anything which has been shown previously in this country. The improvement was noticeable not so much in the variety of new colors shown as in two other respects—the increased number and greater variety of manufactured products colored with American dyes and the greatly increased number of intermediates.

While the showing of manufactured products is the one which would appeal to and impress the casual lay observer, the development of the intermediates is the point which, to the dyestuff chemist, speaks for the sure accomplishment of an independent American dyestuff industry.

In certain quarters criticism was heard of the fact that no great number of new colors were being commercially offered since the show of last year. To a certain extent this is true, although a few very desirable and necessary colors have been developed. But the production of necessary intermediates has been most noteworthy, and promises volumes for what may be expected within the next few months, or as soon as the required basic materials can be released from necessary munition manufacturing purposes.

The American chemists who have battled with the problem of developing in this country the more difficult and rarer colors know that in the problem of the production of the necessary intermediates lies the greatest difficulty. Indeed, it is safe to say that when the intermediates from which certain colors

are developed have themselves been produced, at least 75 per cent of the task is accomplished.

It is, therefore, reasonable to say that American manufacturers, in view of the great strides which have been made in the production of intermediates, have, in the past year, done all that could possibly be expected of them, and we feel that criticism of the industry for want of producing a greater number of new colors is entirely unwarranted.

HOME MARKETS FIRST

During recent weeks considerable attention has been given in the press to the question of the development of our export trade in dyestuffs. It is pointed out that we are now exporting a greater volume of dyes than we formerly imported from Germany. This is, no doubt, cause for great satisfaction, but our American manufacturers should not allow their export business to develop at the expense of domestic consumers. We hear of cases, of whose authenticity we are not, however, positive, where American manufacturers are favoring their foreign customers at the expense of domestic mills. If this condition in reality exists it should be corrected at once. Anxious as we all are to develop business with foreign countries, and to supplant the Germans in this very important department of trade, it should unquestionably be the duty of every American manufacturer to look first to his home markets.

DUBIOUS EXPORT METHODS

Certain firms which carry on a more or less extensive export business in dyestuffs, it is alleged, have made it a practice to deliver to their foreign customers dyestuffs materially inferior to the samples upon which orders were based, and have generally adopted a policy of selling inferior goods which they could not hope to merchandise successfully at home. If this practice in fact exists, it is one which will do untold harm to the reputation of American dye-makers abroad. As we said above, the American manufacturer should look first to his home markets, where his primal duty lies, but if he has a surplus for

export he should make doubly sure that the character of his dealings and the quality of his goods are above reproach. America is a new-comer in the field of international commerce, and she has a reputation to make. If this reputation is damaged at the outset by unscrupulous business methods and inferior merchandise, it will be a most difficult task for us to maintain cordial relations with foreign customers when it is again possible for them to obtain goods from other sources whose business methods they had, in pre-war days, found to be entirely reliable.

THE LIBERTY LOAN

Once again let us urge all members of the dyestuff fraternity to exert every effort in behalf of the Fourth Liberty Loan. The dyestuff industry in particular should make sure that it is in the vanguard of those industries which respond most generously to the Governments' call. The time is coming when this industry will need many favors at the hands of the Administration. Now is our opportunity to show that we are willing to pay our obligations in advance.

THE CHEMICAL EXPOSITION

(Continued from page 9)

background. The company this year made a feature of its manufactured products, including dyestuffs, the volume of which has been more than doubled. Dyed fabrics showing the regulation olive drab and navy blue were among the displays which aroused comment.

THE BUTTERWORTH-JUDSON CORPORATION

Type samples of colors manufactured by this firm were displayed in the concern's booth on the third floor, and consisted of the following: Victoria Blue "B," Victoria Blue Base, Crystal Violet Stand., Crystal Violet Conc., Crystal Violet Base, Metachrome Brown, Dinitro Benzol, Benzidine Base, Benzidine Sulphate, Picramic Acid, Benzyl Chloride, Ortho Nitro Phenol, Para Nitro Phenol, Michler's Ketone, Phosgene, Paranitraniline, Chlorsulphonic Acid, Salicylic Acid, Alpha Naphthylamine, Sulphuric Acid, Muriatic Acid, Nitric Acid, Salt Cake Nitra Cake, Lithopone.

FRANK HEMINGWAY, INC.

For sheer beauty and attention-arresting qualities this booth was in a class by itself. The entrance was framed by a large gate, or arch, of the familiar Japanese design so frequently seen on large country estates. The interior consisted of a background of dark hangings, against which dyed samples illustrating the variety of shades obtainable from the company's products were arranged within three large circles of dark material and laid out in narrow strips like the radiating spokes of a wheel. The lighting was arranged so as to throw this dazzling array of hues into sharp relief, and altogether the display made was extremely effective.

NEWPORT CHEMICAL WORKS, INC.

The exhibit of this company was unique among others at the show by reason of the fact that it occupies a position in the dye industry which can at present be claimed by no other organization. Not only does this

firm make its own crudes and intermediates for the production of its dyes, but goes a step further in owning the coal mines from which its coal is obtained. If ever there was a "House that Jack Built" we have it here, for the manufacturing operations performed by the company consist of mining the coal, coking the coal, recovering the by-products which form the crudes of the dyestuff industry, transforming the crudes into intermediates, and finally, the manufacture of the finished synthetic colors themselves. It therefore occupies the most unassailable position as regards raw materials of any concern in the country, and approximates the ideal state which enabled the German dye firms to build up their monopoly. The booth proved attractive to members of the dye fraternity, and was visited by many more after the peculiar position of the firm was noised about.

H. A. METZ & Co., INC.

This concern displayed dyestuffs and samples dyed from the company's products, and intermediates produced by the Central Dyestuff & Chemical Company, together with sizing and finishing materials from the works of the Consolidated Color & Chemical Company, for both of which this firm is the agent. The exhibit was effective and enjoyed a generous share of the interest manifested in exhibits of American colors.

DYE PRODUCTS & CHEMICAL COMPANY

The military note was a prominent

feature of this exhibit, one of the specialties of the firm being the manufacture of khaki dyestuffs for United States Government uniforms. Of these, a number of dyed samples were on display, together with a demonstration of the various steps in the production of these materials. Type samples were also shown of other dyestuffs manufactured by this firm at its plant in Newark, N. J., together with intermediates, which it likewise produces.

SEYDEL MANUFACTURING COMPANY

Samples of Furamine dyes, together with Benzoic Acid, Sodium Benzoate and a complete line of medicinal benzoates, were the principal features of the exhibit of the Seydel Manufacturing Company, which occupied two booths on the mezzanine floor of the exposition. Benzyl Benzoate, to which great importance has suddenly become attached in medical circles following the discovery of Dr. David I. Macht, of Baltimore, that this coal-tar product could be substituted for the opium alkaloids, was also displayed prominently as an example of our further independence of German manufacturers. The dyes were demonstrated by means of type samples and an exceedingly beautiful collection of furs. This industry, by the way, although it uses a relatively small percentage of the total quantity of dyes produced, marks just one more which was at one time controlled largely by German dictation because of their monopoly of the necessary dyes.

STERLING COLOR COMPANY

Sulphur khaki for United States Government uniforms was featured largely at the booth of this company, which presented a most pleasing aspect to visitors to the show. The products exhibited were those of the Peerless Color Company, of Bound Brook, N. J., and consisted of direct fast cotton colors applicable where fastness to perspiration, acids, alwalis and any but the best dyes fugitive is required.

SECURING FULL CREDIT FOR WORTHY AMERICAN DYES

One of the most aggressive leaders in the campaign to undermine the carefully built-up belief that the Germans, by a species of necromancy beyond the ken of ordinary mortals, were alone able to produce satisfactory synthetic colors, has been the firm of John Campbell & Co., New York, and it was in a pamphlet issued by this concern, entitled "An American Nomenclature for American Dyestuffs," recently reproduced in this journal, that announcement was made of one of the first attempts by any firm to combat the influence of Teutonic propaganda in this oft-recommended manner.

More recently, however, George H. Whaley, president of the concern, has again essayed the role of pamphleteer in order to inform mill men and users of dyes how they can best assist in carrying forward the campaign through its next logical step and directly to the consumer. In a monograph entitled "Timely Facts for the American Public," he seeks to point out how easily credit may be lost for the production of meritorious colors in their transit through the mills, with a corresponding

loss of credit for the mills which had the discernment to select them, as well, and endeavors to show how this waste effort may be made to yield nearer 100 per cent credit both to mill and dye factory. Some of the suggestions contained in this article may be profitably followed, and a mere reading of it is calculated to have a wholesome effect upon those who have not yet fully grasped the ideal for which American dye manufacturers are striving. The article follows:

At this time, when the heart of our nation throbs with one common pulsation and the soul of the people is fired by the same sacred flame that burned in the hearts of the Crusaders of old, when every true man or woman in all this broad land has but one common desire, and that desire is expressed in a whole-hearted effort to win this war and win it speedily, we find it very difficult indeed to keep the subject of war from entering into everything we do or say. So we offer no apologies for the brief discussion of the war that may enter into this message.

Around about the Fourth National Exposition of Chemical Industries, you will see the many tokens marking articles that are now being made by American manufacturing chemists which were not produced before the war. Each individual token represents a chapter of the most interesting, thrilling, yea, and even romantic, story of human achievements that will ever be written.

Lulled into indifference by the insidious propaganda that we could not make, or that in any event we could import certain chemicals and dyestuffs more cheaply than we could possibly manufacture them, we allowed Germany to practically corner the chemical and dyestuff business of the world.

Events in the history of this war have proven also that the dyestuff superiority of Germany was an important part of the long-cherished plan of world conquest inspired by the imperial ruling Prussian family and fostered by their equally guilty supporters, the junkers and pan-Germans throughout the Ger-

man empire. Dyestuff factories can be, if so planned, quickly converted into explosive factories. It therefore becomes obvious why the growth of the dyestuff industry was encouraged by Government subvention and the products sold at such low prices as to discourage manufacturing chemists in other parts of the world from developing and engaging in the business.

We point with pardonable pride to our achievements in the production of dyestuffs since the war started. We feel sure that the American public will also feel proud of our achievements when we confide that our success has not been due, like that of many other manufacturers, to the knowledge of German trained chemists taken from factories formerly owned by German interests, but our colors have been developed and produced by American chemists whose brains and genius have not yet been confronted with a problem they could not solve.

To-day thousands of our heroes are fighting for world freedom, and tomorrow millions more will be on the battle fronts all clad in khaki colored suits dyed with American-made fast colors, such as that German propagandists told us could not be made outside of the German factories. Yes, we do feel proud when we know that many of that vast army of American Crusaders are clad in suits dyed with our own American-made Kromeke and Amalthion fast colors.

We wish also to express here our appreciation of the manner and spirit in which the American mill men have met

the exigencies and demands of these war times. Our factory is working day and night in the production of various colors for army and navy use. We have been forced to delay shipments of orders from our many friends working upon mode shades on account of this Government work, but in each instance our mill friends have cheerfully concurred with us that war work comes first. In the face of such a spirit the Prussian "will to conquer" is doomed to failure.

"Propaganda" was a word uncommon and little used before the war, but now in very general and common use since the discovery of the vast organization the Germans had perfected for the spreading of their "Kultur" and the sowing of their insidious doctrines of efficiency.

A short time ago various newspapers reported the fact that pseudo "American clerks" in American concerns when asked as to the fastness of colors and various articles of wearing apparel replied, "The colors are as fast as any procurable at this time, madam," or "sir," as the case happened to be. "You know there are no really fast colors obtainable since the war shut off the German supply." Notwithstanding the efforts of true, loyal American retail merchants to stop this canard set afloat by German propaganda to hoax the American public, and thus save part at least of their prestige for a nucleus of business after the war, the writer has had the same thing "handed out" to him upon several occasions lately, and in each instance has taken the time and the

trouble to ascertain that the pernicious propaganda spreading clerk was in every case a very poor American citizen.

"Fastness" in colors is but a relative term. There never were any colors that were absolutely fast in every respect. The particular use to which an article is put is the determining factor as to what dyes are to be used in its coloring. For instance, tapestry is not washed. Therefore, fastness to washing is a secondary consideration, but the colors used in dyeing tapestry should be chosen for their fastness to light. On the other hand, fastness to light in hosiery has not been heretofore deemed a necessity, but fastness to washing is an absolute necessity. And there are still other cases where both fastness to washing and fastness to light are subordinated to brilliancy in shade such as in goods for ladies' evening apparel, theatrical purposes, etc.

There are, of course, a few of the rare patented colors which it took Germany many years to produce that are not being manufactured in America today, but it is only a question of a little time until these colors also will be made. Our staff of American chemists who devote their entire time to research work have proven that these colors can be produced "over here," and it is due mostly to the expressed wish of our Government that only the absolutely essential colors be manufactured that these rarer colors have not been offered to the trade.

The same raw materials which enter into the manufacture of most of the

modern high explosives also enter into the manufacture of dyestuffs, and the production of every color formerly made abroad is not in keeping with the Government's conservation policy. But we wish to state with particular stress and emphasis that for every essential, practical use the American dyestuff manufacturer is producing the necessary color, and the retail merchant must not allow his clerks to state otherwise.

There are unfortunately some unscrupulous textile manufacturers who are glad of the opportunity to foist inferior goods upon the public. The retailer can and should protect his customers from these wolves by refusing to handle the merchandise of their manufacture. The vast majority of American mill men, however, are honorable business men who value the good reputations they have established through years of giving honest values. And it is to these representative American textile manufacturers that we wish to address a special message of advice. We speak from wide experience gained through the service we have rendered the mill men during a period of years aggregating nearly half a century.

Every man exercises care concerning the things to which he signs his name, whether a letter, check, contract or what not. The manufacturer who places his name in a hat, on a glove or in a shoe realizes that his success or failure in business will be in exactly the same ratio as the quality and honest value he offers in his merchandise.

There are several makes of hats sold under the name of their makers. The

instant I mention this, two or possibly three names pop into your mind. The owners of these names have built a reputation of making honest merchandise, and you have learned to associate their names with the best hat values obtainable. The prices may be high, but after you have made your purchase you have the constant pleasure of the knowledge that you are wearing "the best hat made."

Now there are many mills in this country who are making cloth for suitings or other purposes that are remarkable for their honest values and wearing qualities. The reader has no doubt had the same experience as the writer. I remember certain suitings that have given excellent service or which appealed to me in some other special way, which I have endeavored to duplicate but have been unable to do, owing to the fact that the tailor has not the same cloth and has possibly forgotten from whom he bought it. Now had the manufacturer only woven his name in the selvage of the cloth it would have been an easy matter for me to duplicate it.

A few years ago we prevailed upon one of our mill friends who was making an especially good cloth to give that cloth a distinctive name and he has thanked us many times since for it. A woman buying that cloth when visiting New York City can still secure it by giving the name to her merchant when she returns home to the little hamlet of Victoria, Iowa, or to the city of Seattle, Wash.

Every maker of good cloth, whether it be expensive or inexpensive, as long as he knows it to be a good money value, should be willing to *weave his name into it*. This is a good, wholesome practice conducive to the production of better merchandise. It has been a constant wonder to the writer why more manu-

facturers have not availed themselves of this simple means of securing maximum sales at a minimum cost.

Very few of us care to "practice what we preach," but in this particular instance we would do so were it not for the fact that we cannot, like the manufacturer of cloth, hats, gloves, etc., place our name indelibly upon our finished product. If we could, every ounce of color we make would bear the name of "John Campbell & Co." We are proud of our dyestuffs. Our factory, while not the largest in the country, has established itself in the estimation of "mill men who know" as a quality factory. Every ounce of raw material that enters our plant is the best possible obtainable and the finished products, Direct, Acid, Sulphur, Basic and Chrome colors are of the highest quality, and are absolutely dependable. Yes, we wish we could let the ultimate consumer know that the colors in the cloth, gloves, hats, shoes, paint, ink, paper and all of the innumerable other articles into which dyestuffs enter, that have given such satisfaction are "Camel Brand" dyes; but this we cannot do, but we do urge those many manufacturers who use our colors to "weave their name into their cloth" and thus derive the full benefits that their quality products entitle them to.

We started out to say but a few things that have been on our mind and find as we proceed that each subject leads to still other subjects which we have not the time to take up now. We feel, however, that our message, brief though it is, will not have been in vain if we have convinced but one manufacturer of the good he can do himself by "*weaving his name into his cloth*," and we will feel doubly repaid if we have helped to nail the canard circulated by German propagandists relative to American-made colors.

In conclusion let us express the hope, inspired by the knowledge of the deeds of our heroes "Over There," that when we meet next year at the *Fifth National Exposition of Chemical Industries*, the Hun will have been driven back to the confines of his own domain, thoroughly cowed, all aspirations to world conquest and dominion whipped from his heart and mind.

NOTES OF THE TRADE

With a capital of \$125,000, the Dambur Chemical Works, Inc., has been incorporated under the laws of New Jersey at Belleville, that State, to engage in the manufacture of dyestuffs, chemicals, etc. The incorporators are M. P. Arlt, A. Arlt, both of Allendale, and William J. Curtin, Brooklyn, N. Y.

The Union Chemical Company, Cleveland, Ohio, is reported to be planning the early erection of a large new local plant for the manufacture of chemicals. The cost is estimated to approximate something over \$1,000,000.

At a cost of \$50,000 the General Chemical Company, Chicago, is erecting a 120 x 145 plant to be located at 123d Street and Carondelet Avenue, that city.

While still producing intermediates in as large quantities as ever, the Barrett Company heads have been obliged to refrain from offering some of those included in the firm's repertoire owing to heavy Government contracts which are now being filled. Among those upon which inquiries are still solicited but delivery of which cannot be promised are the naphthas, phenol, U. S. P., natural; phenol, U. S. P., synthetic; anthracene, 80-85 per cent, and pyxol.

Two new direct pinks for cotton are being announced by Jennings & Co., Inc., of Boston. The first, known as Jenyl Brilliant Rose G T, is said to be a strong, bright and level dyeing pink on the yellow shade, while the second, which has been named Jenyl Rose B N in accordance with the company's policy of applying American names to American dyestuffs, is said to show excellent fastness to alkalis and acids dyeing on the blue shade.



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IN THIS ISSUE

The "Sense" in Census

A Review of the Tariff
Commission's Census of the
Coal-Tar Industry.

Steam Economy in Log- wood Black and Khaki— Part II

By A. Attwood

Buy Liberty Bonds !

AMERICAN DYESTUFF REPORTER

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DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 4

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No. 15

THE "SENSE" IN CENSUS

It Was Put There by the U. S. Tariff Commission,
Who Have Made of the Coal-Tar Census a Living
Document Rather Than a Dry Collection of Statistics

FACTS and figures are universally conceded to be dull, boring things. The truth can sometimes be extraordinarily unpleasant and, upon occasion, much better left unsaid, while statistics of almost any kind, involving as they must long tables of numerals arranged tastefully in parallel vertical columns, have been known to produce severe headaches merely upon sight and to make strong men cover their eyes with their hands. As a specific for insomnia, this sort of printed matter finds many warm supporters, but for a means of whiling away an hour or two in a hammock there are those—even in the dye industry, we'll venture—who plead guilty to a preference for *Scribbler's*, *Snippy Stories*, or the like.

However, it does make a lot of difference what the figures happen to be about. A salesman can be happy almost any length of time while engaged in computing his commissions, and his boss can take an equally deep and abiding interest in the former's expense ac-

count—with fewer subdued chuckles and a less kindly feeling for his fellow men, however—while in the case of the latter there are pretty apt to be stockholders and similar unreasonable encumbrances of short vision and stultified intellects who can never see much beyond the figures on their dividend checks. Picture the interest in mere columns of figures taken by a ravening horde of creditors assembled at a bankruptcy proceeding, and—how did *you* feel when you made out your income tax return?

Yes, it does make a vast difference. Hence, allow us to introduce to makers, vendors and users of American dyes the "Census of Dyes and Coal-Tar Chemicals, 1917," compiled by the United States Tariff Commission, and fresh from the presses of the Government Printing Office, Washington, D. C.

Now, if the writer were a book reviewer he would probably continue by saying that "this work is complete in seventy-three pages and is attractively bound in white paper. It constitutes No. 6 of the so-called "Tariff Information Series" issued by the Government and contains a perfect mine of useful

and valuable information. Should be on the desk of every dye fan"—or words to that effect. But, not being a book reviewer, he yet feels constrained to utter them anyway, although it were bringing coals to Newcastle to point out the importance of this, the first really comprehensive attempt to show clearly just how America has made use of her time in building up an independent dye industry.

While the census was still on the presses a digest was prepared in advance and issued by the Government giving the essential figures embodied in the forthcoming compilation. This, together with some comment, was published in the REPORTER a little over four months ago. These figures were also quoted in the press extensively, while upon the actual appearance of the census, just prior to the Chemical Exposition, they were again given, with fuller detail, until we feel that most of our readers are fairly familiar with them.

The real value of the census lies in

the part which it will play in the conduct of many businesses as a work of reference, and, in future days, as a record by which our progress can be accurately gauged. It constitutes but the first crystallization of the thousand and one separate ramifications of the industry in this country, and it is only when the census of 1918 is published and filed beside it that its full value will be realized by many who now can see only its limitations.

For limitations it has. Some of the firms manufacturing coal-tar products declined to make returns, while yet others refused for business reasons to permit the publication of statements in pounds of various finished products which they were producing. However, although not all the details are spread out upon the printed page for the eye of the observer, this particular deficiency was remedied in most cases by including these figures in the totals given. Again, owing to the variety of uses to which many of the products dealt with may be put, there was necessarily some duplication of figures which it would be hopeless to attempt to untangle.

In addition, the negligibility of the industry in this country up to—and even for some months after—1914, renders facts about it in those early days for the purpose of comparison with the 1917 returns little more than very good estimates, with the result that out of the eight figures which should properly represent the sum and substance and the epitome of the entire census, one is missing. The value of all the artificial colors made here in 1914 is estimated at \$2,470,096, and in 1917 at \$57,796,228. The value of the total amount of coal-tar products made here in 1914 is given as \$3,596,795, and in 1917 as \$68,790,-

856—a truly creditable showing. The number of pounds of colors manufactured here in 1914 is put at 6,619,729, and by 1917 had jumped to 45,977,246. Here, so far, have been given six of the eight figures referred to. The seventh should be the total number of pounds of coal-tar products of all descriptions manufactured here in 1914, but owing to numerous difficulties and the insignificance of the industry at that time is not obtainable from the Government work of reference compiled then, and is, therefore, wanting. The number of pounds of coal-tar products manufactured in 1917 reaches the imposing total of 54,550,107.

All these figures have, however, already appeared, and so we shall not burden the reader with further repetitions. They are included in the present article merely to serve as a convenient record in permanent form which will save several minutes of searching through the census itself, for in that work they are not given by any means together. Vari-

ous other statistics, showing just where the holes in our armour of defense lie, and how by overproduction of some colors and underproduction of others—often more important—we have managed to show the world a bulky total which does not yet spell independence for us when once the details are examined—all this essential material and more besides has likewise been commented upon in these pages and will therefore not be repeated.

Viewing the census as a whole, it is one of the most admirable and ambitious attempts imaginable, and, as is apt *not* to be the case with a work of this sort, it is thoroughly readable and contains far more than the mere cut and dried collection of noughts and digits mentioned at the opening paragraph and more than which one has little right to expect. It is a living, illuminating document and a most valuable contribution to contemporary industrial history. Moreover, it presents the numberless materials and operations

necessary before a single pound of dye can be made, and likewise the maze of difficulties and *other* industries and markets involved before this pound of dye can be made *at a profit*, in so clear and unmistakable a form as to make us long to place it in the hands of every department store shopper in the country who is still impatient of the results already attained.

The census, as Caesar used to say of Gaul, is divided into three parts, the first containing the census proper and the second being devoted to a "History of the Dye Industry in the United States Since the Beginning of the European War." The third consists of a voluminous appendix wherein are given statistics of imports and exports of all artificial and natural dyes and extracts, general coal-tar products, crudes and intermediates, and even ink and ink powders, some of the figures ranging back as far as 1909 and covering the entire period up to the end of 1917. Needless to say these are eloquent and

informing, and (although we are not trying to *sell* you the book) invaluable to anyone engaged in the industry.

Part I opens with a brief summary in which the principal grand totals of significance can be found. This summary is followed by detailed figures on coke production, by-products obtained from the coking of coal, and the production and importation of each of the crudes and principal intermediates considered separately and accompanied with discussions of the relative importance and various applications of each. Then is given the section on "Finished Coal-Tar Products," which is the meat of the whole affair, and from which the census takes its title. The various products appear in vertical columns accompanied by (in the case of dyes) the identification number according to the 1914 edition of the Schultz tables. Beside the name of each product is also given another series of numbers, each denoting a manufacturer producing it, and by referring to the list of 178 out of the 190 manufacturers who contributed to the census it is possible to ascertain the name of the firm and its address at once. This list, which is not quite complete, owing to the refusal of twelve firms to allow publication of their names, appears in the appendix, and is itself valuable. Additional data regarding each coal-tar product include the number of pounds produced here in 1917, the total value of the output, and the average price per pound for which it sold during the year. A detailed interpretation of the now well-known "60 per cent clause," for reference, and figures regarding employees, rates of pay and money expended for research work in the coal-tar chemical industries completes Part I.

These latter figures reveal that 176 firms reported a total of 19,643 employees engaged in the manufacture of coal-tar products. Fourteen additional firms found it impracticable to give this information, but should easily pull the total comfortably above the 21,000 mark. To be sure, even with the list of manufacturers at hand, it is impossible to tell whether the cautious fourteen were large or small firms, and hence any speculation as to the probable number which might be added to the list by the inclusion of their personnels is worse than useless; but figuring the average number of employees to each of the 176 firms which reported to be 112, and multiplying this average by fourteen, we have 1,568, which, in turn, added to 19,643, gives us 21,211—which may or may not be safe as a conclusion. But let us call it 21,000—there's room enough!—and contrast this with the 528 persons engaged in the manufacture of coal-tar dyes in this country before the war, and we can indeed see that America is making a mighty effort. Twenty-one thousand, it is true, may look rather silly beside industries like railroading, for instance, but it should prove somewhat disquieting to Hans the Salesman a year or so hence even at that!

Part II, which includes what statistics were available concerning the industry prior to 1914, devotes itself to a complete history of the industry in this country from that time up to the end of 1917. This it divides into four periods. The first covers the time between August 4, 1914, and March 19, 1915, from the beginning of the war to the cessation of imports from Germany, when the impending dyestuff famine caused an unsettled condition of the markets and an abnormal demand. The second period includes the time up to September 8, 1916, the date of the passage of the dyestuff tariff law which, despite the famous voyage of the *Deutschland*, was characterized by an acute shortage and the active construction of new plants to avert threatened shutdowns in the mills. The third period, from the passage of the law until

the declaration of war by the United States on April 6, 1917, saw the development of the already familiar azo dyes and the branching out into newer and untried fields of manufacture, and it was during this period that so much was done to damage the reputation of American dyes by the enforced use of available dyes for textiles for which they were not suited. The fourth period, from the declaration of war up to September of the present year, deals with the present situation resulting from the passage of the Trading with the Enemy Act, which gave the Federal Trade Commission power to issue licenses for the use of German patents on coal-tar colors, the effect which the war has had upon the industry through the commandeering of important chemicals, and the prospects for the future. There is so much of interest in this section of the census that space precludes our going into it at any great length, and it will, therefore, be made the subject of a separate article.

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A. P. HOWES, Editor and Publisher

**VAGARIES OF COLOR NOMEN-
CLATURE**

Our ancestresses of sixty years ago would have been puzzled (not to say shocked) in many ways by the special sales advertisements now so much in evidence, and not least by the often-recurring nouns of color—nigger, putty, ivory, bottle, wine, champagne, jade, saxe, helio and navy. These, though, given a clue, are less arbitrary names for fashionable colors than the magenta and solferino of the sixties, called after battle. (But surely some of them date from far before sixty years ago—bottle-green, for instance.) One of the curious things about colors deriving their names from natural objects is that so many of them have traveled a long way from the tint of the thing they are called after. The typical "mauve," for instance, is a much bluer shade than the actual mallow flower, though it is just the color of the faded and rolled-up blossom of the malva plant. "Puce" literally "flea-colored"—another color name derived from the French—is not really, if it ever was, the color of the flea. Nor is "maroon"—still another name of French origin—now the color of a marron, or chestnut. But perhaps the strangest transformation of all is "auburn"—which originally meant whitish (Low Latin *alburnus*, Latin *albus*), then a light yellow, and now a reddish-brown. The real cause for this development must surely have been a kindly euphemism. Even now the owners of "carrotty polls" would prefer their tresses to be called "golden."

THE LIBERTY LOAN

Once again let us urge all members of the dyestuff fraternity to exert every effort in behalf of the Fourth Liberty Loan. The dyestuff industry in particular should make sure that it is in the vanguard of those industries which respond most generously to the Government's call. The time is coming when this industry will need many favors at the hands of the Administration. Now is our opportunity to show that we are willing to pay our obligations in advance.

THOROUGH RINSING

Too much stress cannot be laid on the injunction that no trace of soap should be left in goods by the time they reach the dyeing operation. All soap residue is decomposed in an acid liquor, and the fatty acid so obliterated at once attaches itself to the fiber, and in that way becomes an effective hindrance to uniform dyeing. After treatment with soap and soda, the material should therefore be most thoroughly rinsed with water, and for the best results the water used for the purpose should be soft, otherwise limesoaps will be formed on the wool, and these are very difficult to remove, and may in turn give rise to faults in dyeing.

DYESTUFFS IN ARABIA

Aden presents a very promising field for the sale of American-made dyes, particularly for synthetic indigo and aniline red. The principal sale for these two dyes has been in the Aden district and in Arabian Red Sea provinces. The Arab men in those districts dye their clothing an indigo blue when they can secure the dye, and the women demand an aniline red for the coloring of the garments they wear. In normal times about \$185,657 worth of dyes were imported annually. The cutting off of the German dyes has decreased this quantity materially during the past year or two, and there would seem to be a good opportunity for American manufacturers to supply the demand.

STEAM ECONOMY IN LOG- WOOD BLACK AND KHAKI

BY A. ATTWOOD

(Concluded from issue of Sept. 23)

Another arrangement we know worked quite well was one when each machine had two reserve tanks. The pump sent the liquor into the top of the reserve tanks by means of an elbow joint pipe. The elbow was fairly long and reached over two tanks. There was a wooden trough along the top of the tanks. The elbow could be moved over one end of it, and when this was done the liquor from one machine was guided into the reserve tank of the other machine, from whence, if necessary, it could at once descend to the other machine. Each pair of reserve tanks had an elbow pipe, of course, and the trough served for either. It was quite simple and easy to work. The arrangement of Fig. 2, though workable, is much better if each machine has two reserve tanks. For one thing, logwood black does not always go just like clockwork, and for various reasons it is sometimes expedient that the machines should be working independently; for instance, if black orders run out for the moment, or if either machine gets out of order. Each machine and its reserve tanks then become a unit.

FERTILE SOURCE OF WASTE

The great waste of steam, which reserve tanks does not cure, is in the washing-off and the emptying and filling of the dyeing machine. Not only steam but time is wasted by these. How shall

they be saved? The hand process of hank dyeing gives us the clue. These operations must be performed out of the machine. To wash-off the goods out and away from the machine does not sound impossible, but it seems a contradiction in terms to say that a machine can be emptied and filled away from it. Things are not always what they seem, however. "Emptying and filling" with machines of most types is not as simple as it sounds. There is generally a good deal of arranging of the material to be done. Hanks, for instance, may be put in a stickful at a time. Tops may be individually handled and packed. Loose wool may be thrown in or out in hand-fuls. While this is being done the machine is waiting patiently, and may be said to be temporarily out of commission; whereas it might just as well be getting on with its work.

The arrangement, conventionally illustrated in Fig. 3, is meant to obviate these drawbacks.

There are no reserve tanks, so there will be no leakages of heat from *them*. Two machines are worked together. C is exclusively for chroming and D exclusively for dyeing.

The goods are contained in false in-

sides or containers, which by means of an elevator and conveyer can be put into any machine, lifted out, and moved about generally. The drawing shows three of these containers. They are marked *a*, *b*, *c*, and are in the position they would be with work in progress. In C chroming is in progress, in D dyeing is proceeding. At *a* another lot of goods is being packed, ready for its turn.

When chroming is finished, container *b* is craned up to position *d*. While the excess liquor is dripping back into C, container *a* is craned into C. If C is, as it probably will be, a little short of its full quantity of liquor, then the requisite amount for replenishing is sprayed on to the top of the holeful at *d*. What happens? Clean cold water is sprayed on top, but what comes out at bottom is hot chrome liquor, which drips into C. Thus almost all the old chrome liquor *and heat in it* are saved. Chrome is added to C and the process set going. Container *b* is moved from position *d* to position *e*, and washing-off contin-

ued. While this is being done, container *c* (the dyeing being completed) is lifted into position *f*. The chromed wool is slipped in from *e* to *c* and dyeing commenced.

The wool at *f* having drained itself pretty thoroughly into the dyeing vessel, is removed to position *g*, and then

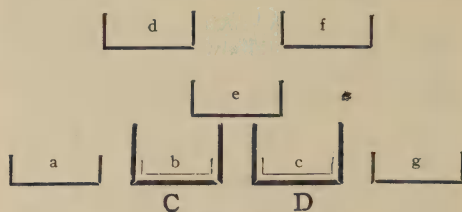


FIG. 3

washed off and emptied. The container is taken back to position *a*, filled again, and the cycle of operations repeated.

The economies of this suggested arrangement will, we think, be fairly obvious. The chroming and dyeing liquors are never cooled down by needless transfers to cold vessels. The machines are in commission practically all the time, and are never emptied of liquor and cooled by washing off with cold water. Changing the containers is only a matter of about five minutes.

The saving of time, and consequent increase of turn out, are as important features as the saving of steam. Under the ordinary system, pumping up takes from ten minutes to a quarter of an hour; letting a liquor down takes from five to ten minutes. Emptying and filling occupy anything from three-quarters of an hour to one and a half hours. By the method outlined, one more holeful per day would be easy.

There is another point also specially important with logwood black. In the systems illustrated in Figs. 1 and 2 there

is always a danger of chrome and dye liquor mixing. It may be a leaking let-off valve, or a careless workman, or any other of a dozen possible slips. A little leak spells a lot of mischief. When the chroming and dyeing are done in separate machines there is no chance of this happening.

The adaptation of existing machines to this system would not be a very great engineering feat. There would be nothing so intricate as a loom, a spinning frame, or a wool-combing machine. The problem would of course take very different form, according to the type of machine. For instance Klauder-Weldon's would be very different from Calvert's.

We said there need be no reserve tanks. If each machine did six or eight lots per day, the liquor would have done very well and could be let off, not only without much loss, but probably to advantage, owing to accumulation of dirt. But, of course, in case of emergency—a breakdown of some kind—a reserve tank would come in useful to save the liquor while repairs were executed.

KHAKI DYEING

Let us now consider khaki dyeing in the light of our study of logwood.

There is first the method of dyeing with chrome in the bath from the beginning. This is a very good way when in a hurry. But it has two faults. It does not get as good value out of the dyestuffs as the after-chroming method. This is particularly the case with the yellow dyes which form the bulk of the khaki bronze shades. Besides the yellow

there is usually some brown and either blue or black dye in the recipe. The browns on the market are very similar to the old Metachrome Brown, and work well with chrome in the bath; but blues and blacks require considerably more to get the equivalent depth of an afterchrome dyeing.

The other objection is, that it is rather a ticklish job using these old liquors over again. The chrome must not go in while the liquor is hot, or precipitation of color lake occurs. We think that most dyers will have found that, notwithstanding longer time, the after-chroming method has dyed the shade the cheapest—entirely by its saving in dyestuff. But this method, unless worked in two baths, entails a fresh liquor every time. The reason for this is that a good dose of chrome is left in the bath. Strange to say, it requires more chrome to get the shade when it is added after exhaustion of the bath than when it is put in at the beginning. By the latter method you use as little as possible, commensurate with full development of the shade, because beyond a point (about 1 per cent of ordinary bichromate of soda) the addition of more chrome checks the color unduly. By the afterchroming method it will be found that 1½ per cent chrome develops a bloomier shade than 1 per cent.

The usual way with the afterchroming is to add the chrome to the same bath and let off when finished. But the arrangement in Fig. 3 would enable the liquors to be used over again. Procedure would be opposite to that with log-

wood black. Dyeing would take place first and application of chrome afterwards. There would not be a thorough wash in between. When the first stage was finished in C, the goods would be lifted up to position *d*, and enough hot water showered on top to cause the dripping of dye liquor to replenish the dye tank. Then, still hot, the container would go to D, and the goods would be chromed off. After this they would be lifted and washed off.

Of course, if expedient, the chroming could be done first, just as with logwood black. If, for instance, fustic came much cheaper than coal-tar yellows, then it would pay to go on to the chroming and dyeing method. Otherwise, one of the others would be adopted. Until it is possible to get very good exhaustion from one bath, combined with a method that will allow a dyeing to commence with practically a boiling old liquor, it will probably pay to run two baths. It may be objected that the afterchroming method, as sketched, leaves a practically boiling liquor to start the next lot with, and this would lead to unlevelness. This difficulty would be overcome by two factors. First, the addition of the next lot of dye would leave the liquor neutral—that is, if the old liquor had any acid left it, the new dye more than neutralizes it. Consequently, not much dye would go to the fiber on first immersion. It would have to wait until the acid was added. Again, the entrance of the goods would cool the liquor. This would be inevitable under any system.

The machine would work, say, ten minutes to get the dye evenly distributed. Then acid could be dribbled in from a dripping pail.

It may seem strange, and the wrong way to progress, to suggest a return to two-bath dyeing. Yet we think our suggestions—to those who have not yet tried the “one-machine-one-job” principle—may be very useful. The principle just enunciated develops into “one machine, one man, one job,” and this results in routine work that is characterized by smooth working, quick results, and general efficiency.

CHEMICAL SOCIETY DISCUSSES DYES

The big part which chemistry plays in helping to win the war was strikingly emphasized at many points in the meeting of the American Chemical Society held recently in Cleveland. In his address of welcome William H. Nichols, president of the society, spoke of recent developments in the chemical industry and rapid strides which are now being made toward introducing new processes. General papers on war and the chemist were read by C. L. Parsons, Grinnel Jones, of the Tariff Commission, and E. W. Washburn.

A symposium on the chemistry of dyestuffs formed one of the most interesting features of the convention. Among those who read papers on the subject were R. Norris Shreve, Calco Chemical Company; L. J. Matos, Na-

tional Aniline & Chemical Company; Grinnell Jones, U. S. Tariff Commission; J. F. Schoelkopf, Jr., War Industries Board; W. L. Crossley, Calco Chemical Company; H. F. Lewis, Bureau of Chemistry; J. M. Mathews, consulting chemist; E. S. Chapin, consulting chemist; Herman Seydel, Seydel Manufacturing Company; C. R. Delaney, J. S. Young & Co.; L. E. Wise, E. G. Adams, H. D. Gibbs, E. W. Pierce, Bureau of Chemistry; A. H. Holland, National Aniline & Chemical Company. The general trend of the papers indicated a tremendous increase in the importance of American dyes, both natural and coal-tar chemicals, since the entrance of the United States in the great war.

Divisional meetings on the second day of the conference were mainly given over to discussions on fertilizer and pharmaceutical chemicals, at which time papers by authorities on the subject were read.

The presidential address given at the conference by Dr. Nichols was largely retrospective, going back to the founding of the society in 1876 and telling something of its early years and its growth.

CLEANING WOODEN DYE TANKS

A good method for cleaning wooden dye vessels, when needed for dyeing a light or bright shade, is to wait after dyeing the next; then, and when the liquor is boiled, put about one ounce of dyestuff in it, and enter some article intended for dyeing a dark shade. Undesirable color or other matter in suspension will be shown by this test. It is then reasonably safe to dye light or bright goods.

Another method is to boil the tank out thoroughly with chloride of lime, using one quart of solid chloride of lime to 150 gallons of water is an advisable proportion.

When thus cleaning with lime, throw the sticks or ladles in also. Boil in this for fifteen minutes. Then let the liquor off, and rinse or wash out the tank thoroughly, seeing that no sediment of lime is left therein.

After this, proceed with the dyeing as before mentioned, trying out the liquor with a garment or piece of material of dark shade first.

NOTES OF THE TRADE

Following a connection of thirty years with the Heller & Merz Company, Alfred A. Haase has resigned his position to take charge of the dyestuff department of the White Tar Aniline Company, Inc., 2-6 Cliff Street, New York. Mr. Haase has been associated with this firm, which carries a full line of aniline colors, since the first of the present month.

Recent advices from Manchester indicate that the long hoped for amalgamation of British Dyes, Ltd., and Levinstein, Ltd., is still far from completion. Thus far the committee appointed to draw up the terms upon which these two firms will unite have held a single meeting, and have not as yet completed their work. Following this it will be necessary to submit these terms to the stockholders of both organizations for revision, and it is expected that several months must elapse before matters can be arranged to the satisfaction of both contingents.

An estimated loss of \$10,000 resulted when the fire demon recently visited the three-story plant of the Iridescent Dye Company, Coney Island, New York. The plant was completely destroyed. Announcements regarding the possibility of rebuilding in the near future have not as yet been made by the company.

Active construction work on the erection of the 100 two-story residences which the National Aniline & Chemical Company is building to house some of the employees of its works at Marcus Hook, Pa., has begun. The dwellings will cost about \$2,000 apiece.

A new concern for the manufacture of dyes and dyestuffs has been incorporated with a capital of \$100,000, under the laws of Delaware, and bearing the name of Kemica, Inc.

A contract has been let by the General Chemical Company for the erection of a brick and concrete, three-story plant at Baltimore, Md., at a cost of \$155,000. The new structure will measure 216½ x 153 feet.

At an estimated cost of \$10,000, the Barrett Manufacturing Company will begin the construction of a new two-story reinforced concrete factory building, 40 x 50, to be located at the corner of Margaret and Bermuda Streets, Philadelphia.

A plant under Government patronage is to be established at Clinchfield, Va., for the purpose of recovering toluol, sulphate of ammonia, valuable oils and other by-products from bituminous coal by a new process of low-temperature distillation. At the same time it will produce a valuable smokeless coal in briquette form for use in the navy. On account of the successful tests of "Carbocoal" by the navy and railroads, and the great promise it gives of saving fuel and conserving by-products for imperative war needs, the United States Fuel Administration and the Ordnance Bureau of the War Department are co-operating in the construction of the plant. The plans allow for eventually treating 1,500,000 tons of bituminous coal annually.

The Los Angeles Chemical Manufacturing Company, Los Angeles, Cal., has filed notice of organization to operate a works at Fifty-fifth and Alameda Streets.

A. P. Munning & Co., Newark, N. J., have been incorporated with a capital of \$500,000 to manufacture chemicals, etc. J. G. Daniel, Brooklyn, and Julian A. Gregory, East Orange, N. J., are the principal incorporators.



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"Circulated Everywhere Dyestuffs are Used"

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No. 16

KNOCK THE "L" OUT OF LEND

And Make an END to the Hun—Some Comment on the Relation Between the Coal-Tar Census and the Fourth Liberty Loan

WE have all heard the expression, so fraught with grammatical horrors and yet with so much homely truth: "Ain't nature wonderful!" And nature, particularly when operating through the laws of universal adjustment—including the familiar "conservation of matter" and "conservation of energy"—is wonderful. Nothing is lost. For every apparent loss there is a gain somewhere else, and for every sorrow there is a corresponding joy. Likewise, as has been said upon occasion, every cloud has a silver lining.

We are now talking somewhat after the fashion of a Greenwich Village advanced thinker. In other words, all this—and much more—has been said, and better said no doubt, before. But we are only trying to point out, for instance, that the rain which spoils somebody's picnic benefits the crops, and indirectly the disgruntled picnickers themselves, and that the epidemic of mumps or chicken pox which shuts up the small boy's favorite moving picture theater also shuts up his schoolhouse, simultaneously.

This preamble has principally to do with the operation of a principle most

strongly brought out from a perusal of the Census of Dyes and Coal-Tar Chemicals, 1917, issued by the U. S. Tariff Commission, and of which a review appeared in these pages last week. At that time space prevented the taking up of that portion dealing with the so-called Fourth Period of the development of the dye industry in this country since the outbreak of the world war—the period from April 6, 1917, which marked the declaration of war by the United States, up to the present time. This is naturally the most interesting portion of the entire census, and, as indicated last week, we felt that it might fittingly be made the subject of a separate article.

Says the census: "The entrance of the United States into the war caused far-reaching changes in the dye industry. The needs of the army for khaki uniforms caused a great demand for dyes suitable for this color and a corresponding decrease in the demand for the colors ordinarily used for civilian purposes." Statistics given further on indicate that there was actually less than half the usual demand for the great variety of dyes normally used for dyeing wool for civilian use.

At the present writing, Bulgaria had yielded unequivocally and signified her intention to be good in future; Turkey is displaying unmistakable signs of distress, and seems to be vacillating, while from the All-Highest himself came winging across the Atlantic the peace dove, bearing in its beak the carefully camouflaged olive branch with the concealed nettles stamped "Made in Germany." And if this dove, like its historic ancestress, "found no rest for the sole of her foot" here, but was promptly sent back again to obtain better evidences of authenticity, it nevertheless furnished the world with such another suppressed thrill as it has not experienced in many weary, blood-sodden months.

Now this country has pledged itself to do certain things and to uphold certain principles, and it will never stop short of the complete fulfillment of its aims. Consequently, speculation regarding the new peace offensive and the prospect of a termination of the war

within the next few months resolves itself instantly back to the old game of figuring out how much longer the resources of the Hun will hold out. When you have the answer to one you have the answer to the other, and we all know that it is our individual and national duty to keep on with our preparations exactly as though the war were scheduled to end in 1928. But the peace note did result in a sudden and universal renewal of speculation as to the *effect* of a speedy peace upon various industries. And in none has the discussion been more fervent than in the dye industry.

To again quote from the census: 'If it becomes necessary to cut off entirely supplies of any of these materials (meaning chemicals necessary to the manufacture of dyes), the progress of the American industry will be seriously interfered with and the 'infant industry' stage thereby prolonged.' And there you have it in a nutshell—the illustration of the workings of nature's law of compensation. And this we believe to be the outstanding thought revealed by the entire census when considered from a philosophical standpoint.

The seasick steamship passenger of anecdotal fame, who was one minute afraid he'd die and the next minute afraid he wouldn't, typifies somewhat the position of the synthetic color industry as it finds itself to-day. One minute it fears that the war will end, and immediately the next minute it fears that the carnage will be prolonged. The war is at once the preserver and the annihilator of the industry. Had it not been for the war, there would be no industry. Because of the war, the industry is short on necessary chemicals. The continuation of the war means the continued hampering of the industry's

supplies of essentials, but likewise gives us more time to prepare for the future in the matter of organization. The speedy end of the war releases these essentials, and also much machinery now making explosives, but precipitates the big commercial struggle to follow. The ability of various manufacturers to meet this struggle will depend almost wholly on the use which they have made of their time in the past.

Thus the war is a hindrance and a help. Just how much of a hindrance it has been, setting aside the fact that it created the industry, is shown in the census, which we quote further:

"The military requirements of the Government, especially for explosives, airplanes and steel, have caused a serious shortage of many materials needed by the dye industry. Toluol, acetic acid, wood alcohol, chlorine, caustic soda and ammonia have been commandeered.

. . . Small amounts (of toluol) have been released to dye manufacturers, primarily for khaki dyes. The development of dyes derived from toluol has, however, been hampered by the high prices, short supplies, and the fear that the supplies may be entirely shut off.

. . . Should it become necessary to use all the acetic acid for military purposes, a severe blow would be given our infant indigo industry."

On the other hand, the census indicates further some directions in which the war has been a help to the industry. To continue from its pages: "These unfavorable influences of American participation in the war are in part compensated by one favorable factor, not possible while the United States remained a neutral. The trading with the enemy act, passed October 6, 1917, gave authority to the Federal Trade Commission to issue licenses under patents owned by enemy aliens. . . .

The end of the urgent demand for quick deliveries has made it possible for the manufacturers to devote more attention to the technical details of manufacture for the purpose of improving quality and uniformity of the product, increasing the yields, and reducing the costs.

Much has been accomplished along these lines, but yet much remain to be done."

Emphasizing the importance of research under this section, the census concludes: "After these pressing current problems have been solved, the research staffs of our new industries in co-operation with the chemists in the American universities can turn their attention to the development of new types of dyes possessing virtues which will enable them to replace dyes now in use. *Not until the success of the American industry along these lines is at least equal to the success of our chief foreign rivals can the industry be regarded as safely established.* Very little progress has yet been made along these lines."

In this case we should like to answer the compilers of the census by saying that, up to the present, very little progress could have been expected, for the efforts of all chemists are, and have been, needed on even more pressing matters. Our chief business is to win the

war, and we feel sure that once the great burden has been removed, the results obtained from our research laboratories will be satisfactorily brilliant.

Yes, our chief business is to win the war, and while we are waiting for the Hun to convince himself that there is but one way out of his difficulties, we must, as before agreed, continue to act as though this war were to be a regular thing with us for the next ten years. Every slackening of effort on our part now, and every day's delay, means a corresponding hiatus in the steady stream of men and munitions later on when the present insincerity of the Potsdam pirates is exposed anew. The position of this publication on the question of the dye industry's obligation to the Government is well known—and as these lines are written the Fourth Liberty Loan is behind its schedule. We *must* forget to wonder whether the other fellow is doing less than we are, and set him an example. You may never have another chance to show your

appreciation of the protection which the very name of this country, America, has secured for you, at home and abroad, from the very first day you first claimed that protection. No matter *what* the Kaiser may say, there is still a war on. Get into the fight!

QUESTIONS FOR REVIEW

Explain the difference between a peace offensive and an offensive peace. Yes, that is right. And what would the latter mean to the dye industry here? Of course it would. Who is the most cordially hated man in the world today? Why? And why did he try to do this? Yes, that is correct. And does he still think he can get away with it? Could lack of proper equipment for our troops aid him? Right again! What is the safest investment to be had any where? You said it! Can those who do not serve on the firing line help out? That is right. Explain the difference between aiding your Government and aiding yourself. And why are these expressions synonymous? Quite right. Compute how much the dye industry will owe to the Government in years to come. That's right, you can't. Would you like to see your son, unarmed, attacking an armed burglar? And why not? How much would you be willing to pay for this gun you speak of? Good! How many Liberty Bonds can you afford to take? Think again! How many bonds can you afford *not* to take? And why the extra ones? You are entirely right; you may go to the head.

SPELL AND DEFINE

| | |
|--------------|-------------|
| Dye, | Liberty, |
| Dynasty, | Patriotism, |
| Nasty, | Tariff, |
| Overthrow, | Future, |
| Wherewithal, | Gratitude, |
| Slacker, | Lend! |

We dye to live,
And we live to dye;
The more we dye
The better we live,
And the longer we live
The better we dye.

A NEW DRYING SYSTEM

Dyestuff manufacturers ought to be interested in a new dryer which has been placed on the market recently. The cardinal difference between this kiln and those in general use at the present time lies in the fact that it dries with *moist* instead of *dry* air. At first glance such a principle would seem to be an absurdity, but, as a matter of fact, it produces excellent results in practical operation.

The theory is that hot air will absorb a considerable quantity of moisture before saturation is reached. So long as the moisture in the air is short of saturation, additional moisture will continue to be absorbed from the material exposed for drying in the kiln. Yet, because of the presence of moisture, the surface is dried no faster than the interior of the material, hence no surface crust is formed and there is no caking. It is asserted by those who have used the new kiln that the cost of operation is materially less than with the dry-air process, and that a uniform drying is accomplished more rapidly and with far more satisfactory results than with the old method.

AMERICAN DYES O. K.

Edward W. Elgin, who styles himself a "fancy dyer" and who makes a specialty of dyeing various fabrics to match certain shades for exclusive modistes and the theatrical trade, has found American colors eminently satisfactory. Mr. Elgin's experience would seem to lend support to the opinion which we have often voiced in these columns--that the fault with American colors lay in the way they were handled much more than in the colors them-

selves. In a recent interview Mr. Elgin said:

"I make no comparisons between German and American dyes. I began my business five years ago and, of course, used to buy the German product. When German dyes were no longer procurable I had a small supply on hand, and when I again went to buy I could notice no change. I got the shades I wanted, and I had no trouble with them. I buy only the best and use them as skillfully and as intelligently as I can. Possibly the excellent results were due to the fact that all my work is done in small quantities, and in that way more care can be taken. Anyway, whatever the reason, I have had no complaints."

At a cost of about \$65,000, the Falls Dye & Finishing Works will erect an addition to their plant at Louisville, Ky., to contain 12,000 square feet of floor space. The addition will be constructed of fireproof brick throughout.

AMERICAN DYESTUFF REPORTER

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 the American Dyestuff Industry. Unbiased contri-
 butions appreciated

A. P. HOWES, Editor and Publisher

NATIONAL ANILINE "HITS BACK"

The following announcement, which is self-explanatory, has been made by the National Aniline & Chemical Company, Inc.:

"As a guarantee to those who have given their patriotic support to this industry during its initial stages that it shall not fall into the hands of the Germans at the close of the war, the control of the company has been placed in the hands of a voting trust on file with the Guaranty Trust Company of New York. This control is in the General Chemical Company, of New York; the Semet-Solvay Company, of Syracuse; the Barrett Company, of New York, and their associates."

There is no doubt that this action will be hailed by the dyestuff fraternity as an evidence of unquestioned Americanism on the part of those who control the National Company, and that it will set at rest once and for all the malicious and unfounded rumors which have connected the name of this company with German intrigue. We have on more than one occasion asked officials of the National why these rumors were allowed to pass unchallenged. We now have a clear and definite reply.

THE LIBERTY LOAN

The very unsatisfactory response which has been made up to date by the nation in general and by the New York district in particular to the appeals for subscriptions to the Fourth Liberty Loan ought to move every loyal American to redoubled effort. There is absolutely no excuse for this, the wealthiest nation in the world, failing to give

this loan a large oversubscription. The peoples of the other allied nations have been called upon repeatedly to reach quotas far greater than this in proportion to their wealth and have never failed to respond in splendid fashion. It would be to our everlasting disgrace as a nation should we do less.

Figures showing in what manner the dyestuff industry has responded are not as yet available, but it is our belief that final statistics will show us to have done more than our part. Let every manufacturer of dyestuffs bear in mind that he owes everything which he has to-day to the fact that the civilized nations of the world have united to subdue the Hun, with his lust for political and commercial dominion over all mankind. The process has been most expensive, and we—the dyestuff fraternity—as being among the chief beneficiaries thereof, ought to be eager to bear a share of the cost much greater in proportion to our resources than is borne by the rest of the nation. The REPORTER has appropriated over fifty per cent of its earnings for the quarter ended October 1 for the purchase of Liberty Bonds. It is by no means too much.

THE LEOPARD AND HIS SPOTS

It is indeed curious to observe how people like to "climb on the band wagon." One William Hohenzollern is a remarkable example. Apparently Mr. H. is now satisfied that the Allies are going to win this war, hence he hastens to indorse—at least theoretically—Mr. Wilson's list of conditions under which peace may be obtained. It is even more interesting to note how a large number of the Kaiser's former admirers resident in this country—and not a few of whom are more or less directly associated with the dyestuff industry—have become suddenly most energetic in their support of a truly American dyestuff industry. There was a time when they held haughtily aloof, but now they are strong for the "America first" idea. Can it be that they, too, have finally become convinced that the American dyestuff industry is here to stay?

"IT IS DIFFICULT TO BE PATIENT"

—Dr. Herty.

What Dr. Charles H. Herty, editor of the *Journal of Industrial and Engineering Chemistry*, has to say on almost any subject is always interesting. Throughout the development of our dye industry, Dr. Herty has been more than merely an interested spectator; he has been a most enthusiastic "rooter" and, by virtue of his position, a powerful aid, a benign critic and an active factor generally. At the convention which resulted in the organization of the American Dyestuff Manufacturers' Association, his utterances brought several fresh viewpoints to the prospective members, grown somewhat listless through much debating, while the accuracy of his predictions anent the industry from time to time has invariably shown his grasp of the situation. More recently, in his capacity of chairman of the advisory committee to act in conjunction with the managers of the Chemical Exposition, he elected to speak upon the lasting qualities of the chemical independence which America is rapidly achieving, and during the course of this address, delivered before one of the meetings of the chemical fraternity, he devoted the following portion to the dye industry. It is reproduced for the benefit of our readers at this time, because of his views on the subject of department store failures to assume any responsibility for goods dyed with American colors. The extract follows:

The present status of the American chemical industry and its prospect for the future must prove gratifying to all good citizens of this republic, but these prospects can never be fully realized unless the work of the chemist is supported by sound and loyal public opinion, which, in turn, will eventually manifest itself in the form of a thoroughly sympathetic attitude on the part of official representatives of that public opinion.

The stress of war preparations and the great part we feel that we are destined to play in the decision have

aroused a wholesome national pride, which should contribute to the development of an atmosphere of good-will. America must make good! America can make good! America shall make good! These thoughts fill the minds of our people to-day. The craze for "imported goods" which has so often palsied industrial effort is now being supplanted by pride in domestic achievement. Certainly the label, "Made in Germany," no longer exerts its hypnotic influence over the masses of the world. Yet German propaganda is insidious, is ever present, and must constantly be combated if we are to gain that measure of national self-containedness in essential industries which will guard us against a recurrence of the economic tribulations which characterized the period immediately following the blockading of German ports. The chief centers of that disturbance were coal-tar chemicals (dyes and medicinals), and potash; and I beg to ask your serious attention to certain conditions attending the efforts to create these industries in this country.

No word is needed concerning the marvelous development of the dye industry. It is here to-day for your inspection. Nor need I dwell upon the close relation of this industry to that of high explosives. That point has already sunk deep into our national consciousness. It was appreciation of this relation perhaps even more than economic need, which brought together producers and consumers in a unique display of unanimity which procured from Congress a protective tariff and anti-dumping legislation which guaranteed life for the young industry.

There was an additional argument

for such legislation, however, undreamed of by any of us at that time. We had not entered the war, and gave no thought to the efforts which might be required of us in the matter of poison gas production. But when our authorities, following our entrance into the war, determined to meet the Germans with their own weapons, and on a scale far greater than they had ever contemplated, it became necessary to make use of every available means for manufacture of toxic material. The great plants planned for Government construction and operation were not sufficient for the program. I am violating no confidence in telling you that at this juncture the Government turned to the young dye industry for plants and trained organizations to augment its poison gas output, and splendidly has the young industry responded. For military reasons I am advised not to mention specific plants or the products manufactured therein, but with official sanction I may say that five dye-

stuff plants are now participating in the production of this material, while many others are contributing indirectly to the same end. The plants were suited to the needs, staffs and workmen were familiar with this kind of work, and the process of conversion to the new role was thus enabled quickly to be made.

In view of the adaptability of the dyestuff industry to such serious national needs, it is difficult to be patient with many of our mercantile establishments which still insist upon placarding their counters with signs such as "The color of these goods cannot be guaranteed." What a sweet morsel of comfort these placards are to the enemy, in effect an effort to preserve the market for him, by our own people, if such they are! Was it ever the practice to guarantee all colors? Certainly not, for even before the war nine-tenths of the dyes used were not fast and did not need to be. Moreover, are our merchants not yet aware of the conditions which led for a time to the uncertainties as to color fastness? Do they not know that in the period of acute shortage of German dyes, before the American industry was started, many German dyes were used for purposes never intended, and so gave bad results, in most cases falsely attributed to American origin, and so when remaining German stocks approached depletion, and the American products began to appear on the markets, these were likewise used in ways never intended, with equally as poor results as in the case of the misuse of the German dyes. With the present adequate domestic production, these matters are correcting themselves. Public sentiment can, and I believe will, make an end of the disloyal placards.

Assurance of the future of the coal-tar chemical industry lies not only with our people as a whole, but even more directly with their representatives in Congress, for it must not be forgotten that legislation stands to-day, as a result of the enactment of the 1916 general revenue bill, which is directly in favor of the German industry, the risk of the very life of the American industry. Every phase of the domestic industry has been studied by the Tariff Commission, and, according to a recent statement of a representative of the commission, its report to Congress will be published soon after the passage of the revenue bill. While nothing is known of the character of this report, I am confident that when the results of this impartial study of the industry are presented to Congress the same unanimous vote will characterize the correctness of errors of existing legislation as has just marked the passage by the House of the eight billion dollar revenue measure. But the time for action is short if we achieve the great military victory in 1919 to which all look forward with supreme confidence. No opportunity must be afforded for the practice of industrial infiltration which may sap the very foundations of the coal-tar chemical industry.

In this connection may I suggest the legislative correction of an error for which we chemists are primarily responsible. In the existing act intermediates are assessed one-half the duties of finished dyes, which ratio was adopted by Congress upon our recommenda-

tion. Experience has shown that this differentiation is a mistake. The difficult stage of production is from the crudes to the intermediates—far more difficult than from the intermediates to the finished dyes. And it is in the field of intermediates that dyestuffs, high explosives and medicinals meet upon common ground. Furthermore, it is evident that when these industries bear the brunt of foreign attack the enemy will take advantage of questions of definition to avoid the higher duties, or will seek to accomplish the same purpose by shipping the lower assessed intermediates for assemblage here into finished dyes by simple processes requiring little outlay. Justification of this contention is furnished by the following extract (page 22) from the "Census of Dyes and Coal-Tar Chemicals 1917," just issued by the Tariff Commission:

"With these exceptions the American dye industry was based entirely on imported intermediates. . . . This was based entirely on imported intermediates. . . . This peculiar situation was due primarily to the provisions of the tariff laws of 1897, 1909, and 1913, which have consistently placed a higher duty on dyes than on intermediates. In general the German industry dominated the field, and the Americans were unable to compete. It happens, however, that in the making of certain dyes the last chemical step of transforming the intermediate into the finished dye is a comparatively simple and cheap process. As the rate of duty on intermediates was lower than

that on the finished dyes, the margin in some instances was sufficient to make it profitable to avoid paying the higher duty on dyes, by importing the intermediates and completing the manufacture of the dyes in the United States."

Knowing, therefore, where the attack will be made, would it not be the part of wisdom for us to strengthen our forces at this point by legislation which will place all of these products on the same dutiable basis?

SIGNIFICANT ITEMS FROM LEHNE'S "FARBER ZEITUNG"

By C. M. WHITTAKER, B.Sc.

The discomfiture of a would-be bully, or the undignified downfall of a "Great I am," particularly when the catastrophe is the direct result of such individuals' very own machinations and overmastering desire to climb too far above their fellows, has always been regarded as a fit subject for righteous merriment on the part of those to whom the—in this case commercial—tyrant was formerly in a position to dictate. Hence our reproduction in these columns of Mr. Whittaker's contribution to the *Dyer and Calico Printer*, for we believe that, along with our English cousins, the American dye fraternity may find something subtly comforting and at the same time exceedingly illuminating therein. We leave further comment to the abstractor himself:

The two following items are from the number of Lehne's *Farber Zeitung*, dated July 15, 1918, and are very sig-

nificant of the internal conditions prevailing in Germany. This appears in the advertisement columns: "ANILINE DYESTUFFS—Wanted to buy Blue and Green as well as AURAMINE; samples with quotations to Color Works, Caswig Anhalt."

The fact that the above works find it necessary to advertise for Auramine in the Germany of to-day is a significant pointer to the activities of the German dye-making concerns. Certainly those people who forecast dumping on the large scale of German dyestuffs immediately after peace is signed can only extract cold comfort from the above advertisement.

"A merchant recommends (since every kilo of wool, cotton, etc., possesses to-day such great value) in order to supplement the supply of shoddy and for remaking into paper yarns and zellulon (one of Germany's new fiber substitutes) that all pattern card cupboards of the dye houses, print works, dyeing schools, color works and of their representatives, agents and travelers should be examined, and all superfluous old cotton, wool, union, jute, linen, half linen, ramie, etc., pattern cards in yarn and piece should be thrown out and all the materials torn out of them. Many small quantities make a big quantity, since all the color works distributed before the war, every two years, general and season pattern cards in addition to the circulars introducing new dyestuffs. The older cards possess to-day only historical interest. The newer cards will be a sufficient guide for choice of dye-

stuffs after the war, and the cloth and yarn samples obtained from the old cards can be used for the manufacture of clothing materials, while the paper and cardboard may be used with other waste paper.

"A similar fruitful source of small and large stuff patterns may be found in commercial travelers' old samples, which will certainly still exist in many warehouses of cloth factories as well as in those of the wholesale and retail drapers, tailors, etc."

As one who has had a long experience in the production of pattern cards, and therefore knowing the weight of material required for each pattern per 1,000 cards—300 to 500 yards yarn, according to size of patterns—it is certain that if the above course was adopted throughout Germany the total yield of material would be ridiculously small.

A guessing competition might also be formed, with the following advertisement which appears in the same number as its subject:

"Agent for many years in England of the German firms of the color industry, since then been interned in England, requires position in the dyestuff or chemical industry."

NOTES OF THE TRADE

Work will be started shortly upon a new one-story brick dyehouse, 50 x 100 feet, which is to be erected, at an estimated cost of \$10,000, by Francisco Santucci and located at 9-13 Walker Street, Paterson, N. J.

With a capital of \$90,000 the Aniline Sales Corporation has been incorporated under the laws of New York to deal in dyes, paints and drugs. The headquarters of the new firm will be located in New York City, and the principal incorporators are A. L. Mullaly, W. J. Horgan and G. E. Graham, 180 West Eighty-second Street, that city.

Tentative plans are being projected for the erection of what will be the largest plant in Great Britain for the manufacture of dyestuffs by Levinstein, Ltd., and British Dyes, Ltd., following their proposed amalgamation. These two huge concerns have already obtained options on Ellesmere Port, River Mersey, which, should they make the acquisitions, will give them possession of a strip of land occupying about one square mile. This eclipses the territory covered by British Dyes at Huddersfield

and is about ten times larger than the ground occupied by Levinstein at Manchester.

Among the products recently come upon the market which should be of interest to users of machinery and general plant equipment is a seamless, flexible metal tubing for which superior qualifications are claimed by the makers. This tubing can be made of either brass or copper, and is especially designed to withstand severe conditions. Owing to its seamless construction it is leakproof, and is said to meet all requirements up to pressures of 5,000 pounds per square inch.

At a special meeting of stockholders of the Barrett Company in Jersey City on Monday, September 16, the plan to consolidate the subsidiary companies by transferring the assets of the Barrett Company of West Virginia to the Barrett Company of New Jersey was approved. The consolidation of the manufacturing concerns under one corporate head will effect material savings in all departments and particularly in respect to taxation.

The War Industries Board is sending out complete memorandum of procedure to obtain deferred classification for employees on industrial grounds. These include forms necessary for securing deferred classification for skilled labor and for indefinite furloughs for return to industry. Copies can be procured from Darragh de Lancey, Room 253, State, War and Navy Building, Washington, D. C.

The Hellenic Chemical & Color Company, Inc., has instituted suit against the Diamond Alkali Company for the recovery of \$4,200, alleged to be due them on sale of 700 tons of soda ash. The plaintiffs claim that they placed with the Diamond people an order and supplied the export license covering 700 tons of ash, to be shipped direct to their customer. There was a difference of 30 cents per 100 pounds between the selling price to the customer and the cost price to be paid by the plaintiffs. The defendants shipped the goods, using the license obtained by the complainants, collected the money and then only wanted to pay the complainants a brokerage instead of the overage agreed on.

With a capital of \$100,000, the Catract Chemical Company has been incorporated under the laws of New York at Buffalo to manufacture chemicals. The incorporators are Ralph Ulah, Frederick C. Slee, Jr., and C. E. Blodgett, that city.

Construction work on what will be the largest plant of its kind in that State, belonging to the Sunbeam Chemical Company, Cable, Wis., is said to be progressing rapidly. When completed, this plant will turn out dyestuffs and chemicals, supplemented by by-products useful to the Government in war work.

Announcement has been made by Frank Hemingway, Inc., that this firm is now offering in limited quantities Auramine O of good quality. The scarcity of this dyestuff since the embargo placed upon the Swiss product renders the announcement news of interest to the trade generally.

The Eastern Dyeing Corporation has been incorporated under the laws of New York with a capital of \$10,000 to manufacture yarns and wearing apparel and to carry on a dyeing and bleaching business. The company's main office will be located in New York City.



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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, October 21, 1918

No. 17

THE DYE TRADE PRESS

Some Views on the Significance of Recent German Dye Journal Literature
--How to Use Your Trade Journal, and Its Part as a Factor in the Industry

WHEN an actor has a day off he straightway secures a pass and watches another Thespian perform. When a doctor finds himself with some spare time he is quite likely to go around to a clinic and watch some other doctor operate. What a bartender does while on a vacation we are not altogether certain, but will inquire into the matter at the first favorable opportunity, while the manner in which those who make, sell or use dyes employ their off hours is likewise something to speculate about.

It is safe to suppose, however, that followers of all the above mentioned lines of endeavor devote varying proportions of their leisure to looking each into his own trade literature. In these days of linotype machines and rotary printing presses, which have made reading a universal habit, it is impossible to point out a single industry which is not represented by one or more of its own trade journals or by a special department of a journal dealing with allied industries. This is as it should be.

Some there are who glance hastily through whatever magazine happens to treat of their own business, simply in a spirit of idle curiosity. Others read

their trade journals as a matter of duty and, on putting the current issue down, heave a sigh of relief so deep as often to seriously threaten the elastic properties of their suspenders--and then remain serenely apathetic regarding what they have read until the arrival of the next issue, when the heartbreaking process must be repeated. But there are yet others who perform this rite weekly or monthly, as the case may be, with the genuine pleasure which comes from a deep and earnest interest in what they are working at and all that pertains to it. The contents of the publication which is designed peculiarly for their own industry is perused regularly from cover to cover, and passages are marked and passed along to other members of the company for special attention. These are the men who comprise the strongest competitors in any line. It is the "big fellows" who are oftenest caught with clippings from their trade papers sticking out of their pockets, and the larger the concern the more extensive is its library and the files of trade literature pertaining to its own business.

It has been said that there are three keys which will unlock all doors. The

first is the Law, the second Unlimited Money, and the third is the Press. For, ever since the first movable type was invented, the power of the last of these has been unquestioned, and at certain times even the other two have been known to quail before it. How many "malefactors of great wealth" have been coerced into following a course which they would rather not have pursued, through a wholesome dread of exposure and ridicule, and how many cases where a strict adherence to the letter of the law would have resulted in a manifest miscarriage of justice, have not been satisfactorily adjusted by an inattentive and impatient jury, solely through fear of the activities of old Mr. Pitiless J. Publicity?

This is true not only of the general "consumer" press, but likewise of the class or trade press. And although there are many who will argue the point, it is doubtful whether one is a whit less independent, generally speaking, than the other. But only under a truly democratic form of government (though not necessarily alone in a republic, as witness England), can a truly independent press be guaranteed.

The ideally independent publication must shine by effulgence and refulgence combined. In other words, while initiating ideas of its own for the betterment of mankind, it must also faithfully reflect the ideas and opinions of its readers. In the case of the trade publication, it must, very often, act as spokesman for the industry which it serves. The measure of its service to the industry is gauged by its ability to do these things.

The gathering together of accurate information concerning a given industrial situation is not in itself a difficult feat. The same holds true of estimating the will of the majority of an industry's personnel. It is the "follow through," the unbiased dissemination of this matter, which is all too often beset with difficulties. Fearlessness is the prime requisite. The trade paper which does not faithfully labor to follow this course does not give to its subscribers the serv-

ice for which they pay, and which they are entitled to expect. As it is a foregone conclusion that a trade paper so serving an industry must rise or fall according to the fortunes of that industry, it is but a step further to argue that, assuming the continued growth of the industry which it serves, the faithful adherence to this policy on the part of its trade paper must result in the continued advancement and success of that trade paper. Despite the croakings of the "wise ones," the race is not always to the "slick." Things really work out as they should in this world more often than not.

In this country, the right of any publication to be as independent as it pleases has never been questioned. It is one of the fundamental doctrines of democracy, and incidentally one of the things which the Allies are fighting for at this very minute. Not so in Germany, for instance. There are without any doubt whatsoever many perfectly independent editors in that unhappy country. But they are all in jail. With the possible exception of Maximilian Harden, the press of that country has been in the habit of saying just about what the Kaiser wanted said. Harden has probably calculated closer just how much he could "get away with" and still avert the Jovian wrath of the All-Highest than any other. But although he has told the Germans a number of wholesome truths at various times, these achievements have called for some rare verbal agility. He has been just barely tolerated because he is adroit enough to keep inside the line, knowing that a step too far in the matter of telling the simple truth would silence him for good and all, so far as his own country was concerned.

Therefore, when the public press of Germany begins to talk of peace and call for the abdication of the Prussian Pest, it may not mean so very much after all—unless, foreseeing the true outcome of the past four years, they are growing bolder. But greater significance may be attached to the lamentations of the German trade press. Here

is a horse of another color. Never so closely watched as the newspapers, save in the matter of politics, the habit of candor is, perhaps, more a part of its mental makeup than might be expected from a hasty survey of conditions. We are inclined to think that when the German trade papers interested in the dye industry take a gloomy view of the future, it means more to us over here than the censored utterances of the daily *Zeitungen*.

The general director of the Bayer company, for instance, has gone on record to the effect that, in his opinion, all is *not* well along the banks of the Rhine. He sees, in fact, hard times ahead for the German synthetic color industry, and gloweringly admits (can't you almost see his mustaches bristle as he says it!) that the capital invested in the dye industries of the countries at war with the Fatherland is now three times as great as that of the German Dye Ring's pooled interests, and that the number of Allied dye works is five times as great as those of German manufacturers. Moreover, he recognizes the fact that the numerous munition works of the Allies intend to produce dyes after the war, and opines, therefore, that the German industry will be obliged to commence with the greatest possible speed a struggle against foreign competition and to count on decreased dividends during the first years.

Contrast this with the blatant boastings of four years ago! Truth to tell, we knew long since that the German dye makers were worried by the strides of the industry in this and other countries, but we scarcely expected to hear them admit it. Let the synthetic color industry of this country take comfort. Basing our conclusion on what we have said regarding the relative accuracy of the

trade presses of America and Germany, an "admission" of this sort, accompanied by talk of "decreased" dividends, may be taken as being tantamount to saying that they know mighty well that the jig is up, and that while Germany may still continue to manufacture and sell dyes, her "whole hog" days are over, her claims to omnipotence grievously punctured, and her share of the profits reduced to a point where the American manufacturer need have no fear for his markets.

The application of the above "change of tune" to the present dissertation is that a muzzled press can be of no real service to the dye or any other industry. It is as valueless as the scroll-work on a saw. By speaking thus frankly, the German trade press did more for the advancement of the dye industry in that country than it ever could have done by mincing matters and lulling the manufacturers into a false sense of their own unassailability.

In these days of intensive competition,

the trade paper is an essential factor in an industry. It must be fearless and at the same time unprejudiced. Its judgment may at times be questioned, but its integrity never. The maintenance of its service to its industry devolves partly upon its readers, who should, for the sake of themselves as well as their trade paper, quickly and openly challenge its mistakes, thereby preventing error from existing long enough to harm either.

This is one of the duties of the reader who believes in making the proper use of his trade paper, and unless he is willing to assume it he cannot feel that he is getting as much out of it as he has a right to expect. Too much apathy for the good of the industry generally is often displayed by individuals who are not always in complete agreement with views publicly expressed, and it is the policy of the AMERICAN DYESTUFF REPORTER to encourage the giving of criticisms and advice by its readers while continuing its work for the advancement of the dye industry in this country.

ARABIA ASKS FOR DYES

In a report to the U. S. Bureau of Foreign and Domestic Commerce, Consul Addison E. Southard, Aden, Arabia, says that the Aden Port Trust returns show imports of dye-stuffs under four headings, of which synthetic indigo is by far the largest. The other three headings in the order of their importance are other sorts of dyes (principally lac dye), aniline dye and saffron. In normal times the imports of all dyes into Aden average about \$150,000 in value per annum.

There has been during the past two years a great shortage of dyes in the Aden market, particularly in synthetic indigo and aniline red. The principal sale for these two dyes has been in the Aden hinterland and in Arabian Red Sea Provinces. The Arab men in those districts dye all of their clothing an indigo blue when they can secure the dye, and the women demand an aniline red for use

in coloring many of the garments which they wear.

German-made synthetic indigo has dominated the Aden market, and during the first two years of the war there were sufficiently large stocks of this dye on hand to prevent any real shortage. Local dealers state that just before the war this dye retailed in Aden for 1½ rupees (\$0.49) per pound, but a year ago the price had gone up to 6 rupees (\$1.59) per pound. There is now little, if any, obtainable.

The small amount of vegetable indigo in the market is in the shape of round balls or small cakes. Before the war this article sold in the Aden market at the rate of about 10 cents per pound. It is now sold at 30 cents per pound. This dye is not, however, of great importance when the synthetic indigo is obtainable.

The dye classified in the Port Trust returns as aniline is almost entirely of a semi-dark but brilliant red in shade. As has been stated, the Bedouin women use a great deal of this in dyeing their clothing. They are just as eager to get it as the men are to get the indigo blue, and the price in the absence of competition is, therefore, of minor importance, although a consideration in establishing a permanent trade. A German-made dye supplied this demand also before the war.

Lac dye is imported from India in appreciable quantities, and is used for scarlet dyeing. This dye, however, was being replaced to some extent by German products, and the present demand may be considered as more or less temporary. As in the case of other dyes, the Arabs are the best customers for lac dye. In normal times it sold in 1-pound tins at 30 to 35 cents per tin.

The only other dyestuff of importance in the local market is saffron, which has also uses other than for dyeing. This is an orange-red color, of vegetable origin, and is imported mainly from India.

The commercial language of Aden

is English, but the dye trade is largely among natives who speak Arabic. Labels may be in either English or Arabic, but preferably in both. Tins only should be used for the dye, and the matter of colored labels is important. The currency in use here is the Indian rupee, and local importers prefer quotations either in that currency or in terms of sterling. The only local bank is a branch of the National Bank of India (Ltd.).

Consul-General Maxwell Blake, writing from Tangier, Morocco, says:

"Practically all aniline dyes imported into Morocco before the war were of German origin. As a result of the absence of paper factories or establishments for the coloring or printing of textiles or other enterprises requiring quantities of dyeing material, the importance of the trade in this article in Morocco has been extremely limited up to the present time.

"The aniline dyes imported into the country are exclusively used by the Moorish dyers of silk and woolen thread and native leather.

"The colors principally in demand are fuchsine, orange, violet, poppy color and blue. German colors were presented in the form of crystals and powder, but crystals enjoyed a much greater preference. Both crystals and powders required simply to be mixed with water. No dyes would be acceptable to the native dyers of Morocco if acids, salts or other chemicals were necessary in their preparation for use. The dyes were packed in tin boxes containing 500 grams (1.1 pounds) net each."

To manufacture and deal in dyes, colors and chemicals, the Lannefield Aniline Color Company has been incorporated under the laws of Illinois with a capital of \$13,500. The head office of the new concern will be located in Chicago.

Dyestuffs and chemicals will be manufactured by the newly incorporated concern known as Industrial Pitch & Tar Products, Inc. The offices of the firm will be located in New York City and the capital is 20,000.

With an active capital of \$33,000, the J. & R. Manufacturing Corporation has been incorporated under the laws of New York State to manufacture chemicals and dyestuffs. The headquarters of the firm will be established at Albany.

The Diamond Dye Works, of Columbus, Ohio, was damaged by fire recently to the extent of about \$8,000.

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 butions appreciated

A. P. HOWES, Editor and Publisher

"PASSING THE BUCK"

During the past couple of years we have heard so much criticism of American-made dyes emanating from the mouths of laymen who know little or nothing of the subject about which they preach that this question has really "got on our nerves." There is no doubt that many of the fabrics and other colored articles of commerce have been unsatisfactorily dyed—but how much of this is the fault of the dye and how much that of the dyer?

Personally, we are of the opinion that ninety per cent of the complaints can be traced to the dyehouse. There is really no good excuse for many of the make-shift dyeing processes which were indulged in by some of our textile mills. More particularly there is no excuse for the haste with which fabrics and other products were rushed through the dyehouse. Under the stress of war orders and an unprecedented demand for their products many conscienceless mills turned out anything that would pass the censor with little or no regard for the durability of its color. They felt safe that they could take refuge behind the "American dyestuff" excuse, and that a patriotic public would stand for anything so long as it was of American manufacture.

There is no longer any excuse for such tactics, and our dyestuff manufacturers should make it clear to the public at large that satisfactory colors for nearly every purpose are now available. In future, mills which try to "pass the buck" to the dyestuff manufacturer should be brought up with a round turn. It is no part of patriotism to attempt to screen slovenly dyehouse methods be-

hind our infant industry. Our dyestuff manufacturers have had a hard row to hoe, but they have done remarkably well. If our mills will make proper use of the colors now available there should be little occasion for public criticism.

WHAT WILL PEACE MEAN?

As we go to press we are advised by wireless despatches from Berlin that the reply of the German Government to President Wilson's latest note is on its way; before this reaches our readers the reply will, no doubt, be public property.

What will be the exact nature of this document it is, of course, impossible to determine at this writing, but it seems safe to assume that whether or not it indicates an immediate disposition to surrender on Germany's part it will, nevertheless, demonstrate that the Central Empires are getting to the point where they are very nearly ready to throw up the sponge.

And this brings us to a contemplation of the probability of a more or less immediate restoration of peace to this war-weary world. What will peace mean to the dyestuff industry? This question is being asked on all sides, and the answers are very nearly as varied as the questions are numerous.

So far as we have been able to judge, the general tone of the answer is dictated primarily by the natural temperament of the one who answers. If he is by nature an optimist, he is positive that a return to conditions of peace will mean greatly increased prosperity for the dyestuff industry; if a pessimist, he sees ruin staring us in the face.

In other words, the arguments both pro and con are so reasonable that the solution of the problem depends largely on the way one looks at things. Under these circumstances we are convinced that neither extreme view is correct. Only one thing is certain—conditions will be vastly different, but our American spirit and ability are bound, ultimately, to overcome all obstacles.

THE MANUFACTURE, USE AND NEWER DEVELOPMENTS OF THE NATURAL DYESTUFFS

By C. R. DELANEY

WIDE attention was attracted by the recent dyestuff symposium held at the convention of the American Chemical Society, and in the course of this meeting, of which R. Norris Shreve was chairman, many important papers were delivered. Those interested in the production of natural dyestuffs will be interested in what Mr. Delaney, of J. S. Young & Co., Hanover, Pa., had to say in the course of the address delivered at the symposium, which was as follows:

It is a cause for particular gratification to a representative of the actual manufacturers of dyewood extracts to be asked to address such a body as this in reference to products of which one hears little in comparison to the newer artificial color industry, but which, nevertheless, has been and still is of inestimable value to the various trades for which dyestuff production is the key industry. The dyewood extract manufacturers have been so exceedingly busy for the past four years for one reason and their natural reluctance during the past fifty years to talk about their own work for another, that it seems no one has felt that he had the time to do more than roughly outline the volume and importance of the natural dyewoods, while in direct opposition to this stand, the artificial color makers—taking obviously a page out of the book of the German manufacturers whose products they are imitating—have been conducting a very violent advertising propaganda, all of which, we of course have recognized, but having been familiar with the German products of both natures, namely, anilines and advertising, the dyewood makers have simply exhibited a more or less mild curiosity when they saw the German products transferred from German sources to American ones.

We all appreciate in our work that there are very necessary uses for the

artificial colors, but unlike the unthinking, we know that there is a very large use for our own. In fact, a chemical analogy will indicate what might be called our state of mind. We all appreciate the value of saccharin, the synthetic product; we appreciate what the chemist has done in producing this material so much more powerful than sugar, which for certain things it can replace, but we have yet to hear that anybody used saccharin with his buckwheat cakes—preferring the product of nature's own chemist, the bee. It is the same with a great many dyers, who all appreciate the strength, the ease of use and other salient points about the artificial colors, yet, as in the case of saccharin, there seems to be something wanting, and recently I read a statement made by one of the most celebrated artificial color chemists in which he stated that all artificial blacks were judged according to their ability to compare with logwood.

It is obvious to all chemists that the explosive industry and the artificial industry are concomitant, but do you not sometimes lose sight of the fact that the tanning industry and natural dyestuff production carry the same analogy? At forty-eight hours' notice any one of our dyewood extract plants can be converted into the manufacture of tanning extracts, and while, of course, the hazards of the explosive business bringing with them the enormous profits that are generally derived from killing, have certain attractions, nevertheless, there has been a proverb since the time of the early Egyptians that "there is nothing like leather." And while on this subject it might be well to say that to this date there has been found no substitute for natural dyestuffs for the penetration of dyeing for black leather.

The prize that all of us have been striving for has been the use of our

products by the United States Government, and I rather doubt that any of the artificial color people have anywhere near the total proportion of output in Government contracts that the natural dyestuff makers enjoy. A recent questionnaire sent out to every one of the customers of our company between the period of January 1 and June 30, 1918, discloses that 72 per cent of their production of flavine was used for army business, also the following percentages of their other products: quercitron bark extract, 33 per cent; logwood extract, 80 per cent; domestic sumac extract, 42 per cent, and divi divi extract, 50 per cent. These percentages would be very greatly more were it not for the fact that another end of the industry, namely, the wall paper trade, which has always used the natural colors, owing to their cheapness and greater efficiency for their work, does not come under the heading of war necessities, and, therefore, we have been compelled to deduct the very considerable quantity they consumed from the totals.

In addition to our own country, Canada, France, England, Russia, Italy, Australian, India and Japan are using larger quantities of our products than they ever did, at least as far as our own exports show. It is unfortunate and so thoroughly representative of the conservation—to give it the mildest name—characterizing the dyewood extract manufacturers that they have never partaken of the benefits of any propaganda that would bring to the attention of the consumers of dyestuffs the advantage

of the natural products over the artificial, and as a result it seems as though the manufacturer of natural dyes has been lost sight of by a very large number of those people who in reality could actually use the natural dyewood extracts for the colors that they wish to produce, instead of the foreign dyestuffs and their imitations upon which they have learned to depend.

It is hardly necessary to advise you that the Oriental rugs of several hundred years ago still retain their beauty and brilliancy of color to the present day, and if any one cares to investigate the clothing of three or four hundred years ago they would find that at the courts of France in particular there were colors of vegetable derivation used in silks and satins that would rival the most gorgeous shades of the present day. The Oriental rug will dispose permanently of the argument as to whether natural colors are fast. Of course, if any especial tests are made, such as boiling in caustic or spotting with acid, generally the natural dyestuffs, unless specially prepared, will not withstand these extraordinary and ridiculous tests, but for our part we always have thought that until clothes were boiled in acid in

order to clean them that it was hardly necessary to employ such tests as indices of the quality of the dye. If they will stand the exposure to the air and rain and sun, and will not run or bleed into surrounding fibers, we believe that they have fulfilled their destiny, and it has always been the aim of the natural dyestuff maker to produce—shall we say—honey rather than saccharin.

Possibly you may have seen in the various trade journals a rather surprising statement to the effect that prior to the war 60 per cent of all of the concentrated yellow dyestuff that we manufacture under the registered trademark name of flavine was exported to two very large artificial dyestuff manufacturers in Germany and Switzerland. In fact, had it not been for the business that we enjoyed through them it is probable that the manufacture of flavine would have been discontinued, owing to the fact that we did not appeal directly in the United States to the textile industry, as it was something that no

manufacturer then could do—compete with the German manufacturers and retain his own self-respect at the same time. However, our foreign business was enough to keep that section of our plant operating, and this would indicate that some of the dyes manufactured in this country are of value to those who formerly—we were in the habit of thinking—were the leading authorities.

As far as the manufacture of dyewood extracts is concerned, it is exceedingly simple, and yet there are one or two things that have to be thought of and taken into account at the same time. Our coal-tar friends have a number of exceedingly complex reactions to look after, and they produce materials with unforgivable names. They, of course, know everything about what they are doing, but we in our business are different. We try to produce the same kind of material to-day that was produced fifty years ago, and have a hard job keeping it precisely identical, and this is where we need and use the best chemists that we can secure, in spite of the fact that when we get all through our material is known as extract and not, for instance, monosulphonodioxanthraquinone.

To cite a homely illustration of the dyewood extract makers' art, the brewing of a pot of tea will be appropriate. The English chemists at least know that tea boiled is tea spoiled, and that in the making a diffusion process is used for not less than two minutes nor more than seven, and that the water should be between 208 and 212 deg. Fahr. in order to secure the best results, allowing it to cool down slowly. It is also found that tea is made better in earthenware vessels, which are heat retainers, than metallic ones, even though

the metallic ones may be of such composition that they will not easily combine with the tannin present in the leaf. This is extract making on a small scale. We do not confine ourselves to a narrow temperature, but extractions of the necessary raw materials are made according to experience, which has stretched over many years at temperatures between 140 deg. Fahr. and 300 deg. Fahr. All kinds of pressures are used from below the atmosphere to 150 pounds to the inch; intermittent and continuous diffusion and percolation are alike used, depending upon the product to be produced, and you may be interested in knowing that a difference of 10 deg. in the extraction temperature of certain materials will cause a profound difference in the quality and also in the yield or amount of extract produced. An extract plant at best has always been an expensive proposition, and where the barks, leaves and fruits are used which are of seasonal gathering, the manufacturer is compelled to maintain an enormous stock of raw material. In our own plants we have not less than 25,000 tons of bark on hand to-day, none of which can be used until later on this year, and there will be no more to be had until the summer of 1919, which in turn cannot be used again until after October. We, therefore, have to carry stocks to last as long as fourteen months, which makes the amount of capital invested in these industries very great indeed.

The woods are cut in one of two manners—either by a large revolving disc,

with knives placed upon the edge, and to which the logs are fed by a power feed, or else by means of the better-known wood hog, which is an exceedingly heavy piece of machinery revolving at very high speed, and to which the wood is generally fed by gravity. Instead of the cutting part of this apparatus being placed on the outside of a flat disc or wheel, it is similar to a spool or V-shaped wheel, on the inside of the V being the chipping knives, which are generally staggered. While this apparatus will cut wood more quickly than the disc, it does not chip it as well, at least this is the opinion of a number of authorities, although I must say that the authorities consulted all use the disc chipper. Some idea of the magnitude of the discs may be had when you understand that one of these discs alone is operating in the United States which weighs 35 tons. After the wood is chipped it is generally run through disintegrators, such as the Williams or Jeffries mills. You probably are familiar with both of these, but for those who may not be, these mills are simply crushing apparatus containing several score of loose heavy hammers, entirely free, excepting at one end near the center of the mill, and swing from a common central disc. The edge of these hammers moves at a speed of approximately one and one-half miles per minute, and with about 250 hp. behind them any material gets into their grasp is generally disintegrated or else the mill gives way. There have been times when through carelessness or oversight a steel

wedge used for splitting the larger logs or a railroad spike—in the case of car bark—has gone through the mill and been hammered around inside of the cages until the edges are worn off sufficiently for it to be thrown out white hot on the floor or into the elevators which convey it to the rooms wherein the ground material is generally held before extraction. This oftentimes is the cause of the greatly dreaded dust explosions which have wrecked several extract plants. After the material has been properly prepared—and in passing it might be stated that the size and cut of the preparation has a tremendous bearing upon the time of extraction, which again has bearing upon the quality produced—it is conveyed by the necessary automatic machinery to either autoclaves or wooden extractors. The autoclaves are either of steel or steel lined with tile, copper or bronze. We generally use the copper ones, bronze fitted. These autoclaves take a charge of from one to three tons, according to the size, and are fitted with lines for water, liquor, live and exhaust steam, compressed air and vacuum, so that they can be used for any type of extract that it is desired to produce. The open extractors are generally made of wood, and hold from six to twelve tons at a charge, but owing to the difficulty of controlling the oxidation, always present when liquids containing tannin are exposed in thin solution to the atmosphere, these large tubs have been superseded in the modern works by autoclaves, although for certain purposes

they are still largely used. After the material is exhausted by the necessary solvents, the head liquors are concentrated, generally in vacuo, although occasionally they are partly evaporated in plenum. There are, of course, variants of this, as, for instance, in the making of powdered extract, sometimes the thin liquors are concentrated in vacuo and then finished in the open, and vice versa, depending altogether upon the material which is to be produced. There is a multiplicity of apparatus for the finishing of these extracts, and it seems to me that the principal difference is that one costs more than the other. So far as to the manufacture.

The uses are various. Silk, wool, cotton, leather, paper, all draw upon the natural dyewood extract maker, but I believe that their best use is for wool, silk, leather and wall paper lake. They seem to be particularly fitted by nature for these purposes, and generally nature knows what she is doing. There never has been any really satisfactory substitute for the black which is produced on leather by logwood, and the very best black silks and broadcloths are always dyed with this particular product, and as to wall paper, even in Germany the wall paper manufacturers used to prefer quercitron to the color lakes that were made by the artificial color makers in Germany. It may be that our product sold over there so well because the artificial color makers did not use the same brand of persuasive art upon their own people that they did upon our dyers here before the war.

There has always been one very great advantage that the artificial color possessed over the natural colors, and that is their ease of application. With anilines an operator took a certain amount of material that he wished to dye and placed it in a vessel containing the diluted dyestuff with a little salt or sulphuric acid, turned on the steam, and in an hour the whole operation was finished. With the natural dyestuffs it was different. First of all, the goods had to be soaked in some material that had an affinity for the dyestuff, the so-called mordant, and after this they were placed in the dyestuff and turned around or worked, as the expression is, until the requisite color developed. This required two operations—first, the mordanting and then the dyeing, and twice the time; and although our business was increasing in the United States for the natural dyewoods before the war, until in the early part of 1914 we made and sold more dyewood extracts than we ever had done for any similar period since 1869, nevertheless we could not get over this seemingly insurmountable obstacle to the general employment of our production until the fall of 1917.

It has been taken for granted by the

dyewood extract chemists that the following conditions obtain: First, that alizarine is artificial madder; that natural madder is a dyewood extract, or, if you prefer it, a vegetable product. If alizarine can be made so that it will no longer be a mordant color, it is obvious that the vegetable product madder can also be made so as no longer to be a mordant color, and if the madder plant stands as a generic type of all of the dyewoods, then by treatment similar to that which the artificial colors receive it might be possible to product dyewood extracts that would no longer require mordanting in a separate bath in order to fasten on to the fiber.

On November 22, 1917, our company took out patents upon single bath dyewood extracts made from vegetable dyewoods, and there are some dyed swatches of wool and here one of mixed wool and cotton dyed simply by taking a certain quantity of the dyestuff, dissolving it in water, placing the fiber to be dyed in the bath and treating it exactly similar to the artificial dyestuff. This has removed the one point of superiority possessed by so many of the artificial colors, and we believe now that the natural dyewood industry will de-

velop along its just and proper lines. Too long have we been content with producing exactly what we produced before, and too long also have we been content to let some interested party say that ours was indeed a veritable dyeing industry, in the sense that it was partly moribund and that there was no hope for us. To-day, when we are operating at what we consider normal capacity for the looms and dye houses in this country, there are required not less than 150,000 tons of logwood and 50,000 tons of quercitron bark to produce the dyes that are being used for the dyeing of black, blue and yellow, and in proportion to the amount of looms engaged in 1918, and those being engaged on similar production in 1914, there is actually a little less proportionate use of dyewood extracts than there was in 1914, owing to the difficulty in securing supplies from foreign ports due to the shipping situation, and this has compelled some of the dyers to cut down the quantity of logwood that they are using and substitute some of the artificial colors instead.

Just one thing more, and that is in the various medical journals there have been some statements appearing recently covering the use of flavine in gunshot wounds. This has appeared in *Chemical Extracts*, *American Medicine* and *The Lancet*, and inasmuch as my company is the only manufacturer of flavine, which is a trade-marked registered name for the concentrated yellow dyestuff made by us from the inner bark of the black oak, I have done all in my power to bring to the attention of those interested that flavine has no therapeutic action whatsoever. The material spoken of incorrectly and wrongfully called flavine is one of the acridine derivatives used for dyeing yellow

made, I believe, by the Bayer company, and with their usual disregard for any hampering conventions they have seen fit to take the name of the best yellow dyestuff they knew, namely, flavine, and label their infernal acridine derivative with it, and I take this opportunity of drawing attention to this newer use of a natural dyestuff, namely, the labeling of an artificial color with a name that does not belong to it.

NOTES OF THE TRADE

To provide for business extensions, the Ajax Aniline Works, 184 North Eighth Street, Brooklyn, N. Y., has increased its capitalization from \$15,000 to \$37,500, according to a recent announcement. The firm is engaged in the manufacture of dyestuffs.

At an estimated cost of \$8,500, the Amalgamated Dyestuffs & Chemical Works, Plum Point Lane, Newark, N. J., will erect a new one-story, 50 x 90, building, according to plans prepared for the company.

Notice of authorization to operate at Garfield, N. J., has been filed by the Metro Color & Chemical Works, of New York. Joseph J. Darvin, Midland Avenue, Garfield, will be the local representative of the firm.

Work will be started within a month on the installation of new machinery for the manufacture of acids and dyes in a plant recently leased at Rowayton, Conn., by the Aniline Chemical Company, of New York.

With a capital of \$10,000, the Johnson Coal-Tar Products Company has been incorporated under the laws of New York by A. M. and R. J. Jordan and C. C. Reeve, 4022 Ferris Street, Brooklyn.

The Electro Chemical Products Corporation has been incorporated with a capital of \$15,000 at Bayonne, N. J., to deal in dyewoods and general chemicals.



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Design in Relation to Fabric Printing

By D. A. Munro

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THE THUNDERS OF SILENCE

Failure of Dyers to Confide in Dye Manufacturers Fairly Shouts Inefficiency, and Keeps Alive the Rule-of-Thumb Methods of 9,000 Years Ago

IN ancient Egypt the man who followed the calling of a professional dyer was socially a quite impossible person. The Egyptian "400" knew him not; his name never appeared upon the calling lists of People who Mattered. He never received a bid to any of the smart little luncheons or teas which enlivened the progress of the Cairene social season, and his presence in any select gathering would have been as welcome as a U-boat in a merchant fleet, and would have been an immediate signal to raise the dreaded cry of "*Trun 'im aout!*"* accompanied by a hurry call for half a hundred of the Marster's personal regiment of Archaic Archers or Javelin Jugglers.

Moreover, it was writ large upon the Egyptian statute books, without any qualifying clauses or amendments—or tear-stains, either—that the dyer of those days could not even live where he elected. Not for him were the joys of jumping up from a breakfast in the residential suburbs of Thebes, sprinting like mad to catch a chariot at the corner of Osiris Boulevard and Rameses Street, and then burying himself in his

current copy of the *Egyptian Dyestuff Papyrus* all the rest of the way down to the dye house. Not much! He was a serf, and for him and his fellow craftsmen a special quarter of the town was set aside. Here he was born and was trained by his father; here he practiced his profession and raised *his* family, and here he passed away. When he awoke in the morning his work was practically under his nose, ready to begin. His neighbors on both sides were in the same business and so was his friend, Ptolemy Ptsmith, on the next block. . . . "Good old Tol," he may have mused at times, "I must sneak around some day to peep over his back wall and see how he gets that light indigo shade." . . . He carried all his formulas under his shaven scalp, having acquired them from his father, and when that old gentleman had finally dyed for the last time and become a shade himself, his chances of learning any more about his profession were greatly diminished. Thus he passed his entire life in the atmosphere of his trade, and seldom left the confines of his community. The laws did not encourage that.

*Egyptian idiom, signifying forcible ejection.

This may seem a trifle harsh, this rigid segregation. But there were reasons for it which do not exist nowadays. In the first place, so assiduously did our hero apply himself to his work that he may be said to have fairly wallowed in it. The dyer knows full well the number of times it is possible to splash oneself during the course of, say, a year. So it was with his ancient prototype, the only difference being that the medley of stains did not come off with his garments at night, because his idea of a complete suit of clothes—he worked under a broiling sun much of the time—would have made even a modern interpretative dancer despair. He possibly may have entered the dye bath himself now and then to greater or less degrees, either by accident or design—or at least have reached into it to recover articles dropped therein. We do not know, but the facts are that in time he became a veritable walking color card for his own repertoire of hues. An old hand, who had been at the game for years, eventually found himself a spectacle which caused horses to shy violently and frightened children into hysterics, for the colors were of excellent fastness to both light and washing, and simply had to wear off. In addition, the dyer was perpetually smeared with other chemicals of the trade, which imparted to his person an aroma that constantly advertised his business for the benefit of those to leeward of him, and was extremely offensive to people who were unused to it. Hence, as we have intimated, he was utterly *persona non grata*, a pariah and an outcast.

Now, if we have been having a little amusement at the expense of the earliest dyer we have any record of, we have done so for the purpose of calling attention to the great change in his status through the thousands of years which have elapsed since that time. To-day he occupies what might be termed the keystone position of one of the most important industries in the world. He has colors to work with and facilities for applying them which

were not dreamed of even threescore years ago. His art has developed by leaps and bounds in the past half-century until it now is a matter requiring thorough technical training and constant study to maintain the standards already in force.

To him the textile mills and spinners send their best products in the shape of cotton, wool and silk, in hanks or fabrics. To him the dye manufacturer sends his wares, some dyes intended for use on one of these and some for others. No matter how rapid the output of these two producers, the finished goods cannot be marketed any faster than the dyer can perform his work. No matter how good the quality of the dyes or textile materials, the value of the results is limited inexorably by the dyer's skill in the practice of his profession. He literally holds in the hollow of his hand the reputations of his manufacturer clients.

In the days which we have touched upon, the dyer worked largely by rule-of-thumb methods. His task was easier, it is true, for he was required to apply but comparatively few and simple colors. But he understood the application of these so thoroughly that it is doubtful whether he could have turned out better work by following written formulas and weighing out his reagents with meticulous care, for his judgment in matters of that sort was developed almost to the point of being a "sixth sense." But to-day our variety of colors has expanded so rapidly that it has outstripped our knowledge of how to apply all of them to the best advantage, and the problems are now so involved and so numerous that no longer can any one man have a complete knowledge of each branch of the art. And yet in some dye houses the rule-of-thumb methods are still dominant. In many cases they have been swept away, but in far too many more they seem to die hard.

It is safe to say that 90 per cent of the complaints which are afterwards made of dyed fabrics spring from sins of omission and commission in the dye house. We are aware that liberal al-

lowances must be made for the times when dyers have been rushed to death, and also for the times when they have been obliged through force of circumstances to make substitutions knowingly of colors intended for other uses. But the bulk of the trouble is still due to too little co-operation between the dyer and the dye manufacturer.

In order to insure getting the proper results, the dyeing establishment should maintain its own research department in charge of a competent dye chemist. If it is regarded as next door to impossible to obtain such a man ready-made, so to speak, any good chemist who has studied the dye field at all can equip himself to minister to the special needs of an establishment without the loss of too much valuable time. The point is to start him at it, and to give him a free hand, with plenty of authority, after acquainting him with the most pressing problems. This insures the presence of an executive possessing adequate knowledge of how to tackle the difficulties. An ideal arrangement is to make him a director in the company.

This procedure obtains practically in every case among the larger mills, of which the Arnold Print Works is a typical example. This organization has consistently obtained better results than many by reason of the excellence of its research department, where carefully conducted tests are constantly carried out. By this means the executives of the company have known in advance what results to expect; hit-or-miss methods have been reduced to a minimum; they have been able to avoid many a "bad buy" in the matter of dyes, and have saved much money which might otherwise have been sacrificed upon the altar of ignorance.

It is true that many of the smaller

dyers, who have been the principal offenders, are unable to devote the necessary capital to the maintenance of special laboratories. In this case they still have a way of insuring that the best use is made of the dyes purchased. They can at any time go direct to the dye manufacturer and obtain accurate information—provided that they, in turn, are willing to be equally frank and open. Misguided reticence on the part of some of our dyers as to the purpose for which a dye is bought has done as much and more to injure the reputation of the industry generally than all the German propaganda put together. It will be remembered that in the days when Hans the Salesman came around to sell dyes he always insisted on knowing what the buyer had in mind. Then, if he felt that his customer was asking for the wrong class of color he recommended something better suited to his needs, and if he saw that the man he was selling to was attempting an unfamiliar task, he immediately cabled for

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Carl the Chemist to come over and show him how to go about it. No wonder domestic competition never even lifted its head!

Such service the American dyer can still have, if he will but make use of it. Too many persist in refusing to divulge to the manufacturer the kind of goods they intend to dye with their purchases. The result has been very sad indeed, and it has hurt the manufacturer, at whose door the fault should not be laid whenever there is dissatisfaction. To all complaints the cry has been raised: "Blame it on American dyes," but this excuse is fast becoming worn out. American dye manufacturers are equipped to render very efficient aid to the dyer. They solicit applications for that aid, and the dyer who does not call upon them when he is in doubt is hurting himself and hurting the reputation of the industry. He is a misfit cog in the machinery with which we are preparing to fight the Hun's commercial invasion, and it is high time that he real-

ized that our chances of victory depend entirely upon complete co-operation.

With this co-operation it is perfectly possible to defeat the invader, preserve the budding industry for future growth, and maintain for him a supply of dyestuffs which can never again be cut off as it was in 1914. Let us find among us no more "throwbacks" to the days of ancient Egypt.

NOMENCLATURE OF AMERICAN DYES

With the universal cry for standardization in the dye industry filling the air, there has much been written regarding the application of this excellent principle to the nomenclature of dyes. Praiseworthy though the spirit of the thing may be, the desire to develop an American nomenclature, while still young, has already shown a marked tendency to result in as much eventual confusion as the German system, with its thousands of names. The only possible benefit from changing is the overthrow of German propaganda, and by the time everyone has unlearned the German superfluity of names and acquired the superfluity which threatens to swamp us over here, German propaganda will have become a thing of the past anyway. We must have American names for our dyestuffs without question, but the growing tendency on the part of manufacturers to each coin his own names for his line is too much of a good thing, and will turn the industry into a new Babel of Tongues unless halted. A writer who signs himself "Westford" in the *Textile World Journal* believes that we must go slow, and makes some helpful suggestions in a recent article appearing in that publication. With his views we are in full accord, and are presenting his article herewith for the benefit of our readers:

An association of American dyestuff manufacturers having been formed, it is perhaps not out of order to suggest matters for its consideration. From the consumer's point of view, at least, it is a matter of some concern what the newly made American dyes shall be

called. After the standardization of the product, the nomenclature is surely second in importance, and the time to act is before a heterogeneous collection of names derived from towns, cities, manufacturers and dealers, together with the qualifying adjectives implying fastness, and various letters or numerals of more or less significance, becomes too firmly established in the minds of all concerned, as well as in the advertising literature.

We are all too familiar with the conditions prevailing before the war, when for about nine hundred chemically individual dyes we were burdened with some thousands of authentic names, such as would be found in a standard reference work like Schultz's tables, to say nothing of the other names coined for the same dyes by the selling houses of the German manufacturers and by independent dealers. Many colors were made only by one firm and had only one name. On the other hand, examples were common where a color was made by ten or more different manufacturers and had as many distinct names. Then, again, other dyes, like a brand of Safranine, would be turned out under the same name, but a different "mark" for each dealer.

We cannot explain why these things were so and must feel that the methodical German "slipped up" a little in his systematic habit. Neglecting the motive, for there undoubtedly was one in much of this confusion of names, the outstanding feature is a corresponding confusion in the purchasing department of a mill, and often in the laboratory and dye house as well.

The object of this paper is to call attention to an apparent tendency in this direction on the part of American manufacturers and dealers. It is hardly a

protest because the matter has not gone far enough yet to require it. We cannot, however, urge too strongly on any committee of standardization a reasonable limit to the numbers of names that shall be recognized as authentic.

"American dyes for American dyers" is a justly popular slogan. We cannot too strongly back up all genuine efforts in the direction of a complete range of dyes manufactured entirely on our own soil. When we come to the idea, however, of American names for all these dyes it is a rather different proposition.

It is hard to illustrate this statement properly without quoting the names of the various dyes offered for sale, and in that way making the matter too personal. However, if one sets out to canvass the market for available direct dyes, for example, he is at once struck with some of the peculiar names by which each manufacturer designates his own particular series of dyes. His astonishment is certainly not diminished

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AMERICAN DYESTUFF REPORTER

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A. P. HOWES, Editor and Publisher

THE PRESIDENT AND POLITICS

The President of the United States has issued a call to the voters of the nation to register confidence in the Administration and its policies—both at home and abroad—by returning a Democratic Congress at the November elections. Mr. Wilson bases his appeal on a question of patriotism. The inference from his words is that if one votes for a Republican candidate he is unpatriotic. Just wherein this lack of patriotism on the part of the Republican party comes in it is difficult to determine—the records show that Republican Senators and Congressmen have supported the Administration's war measures quite as loyally as have their Democratic colleagues.

In the early days of the war Mr. Wilson appealed to the Congress to adjourn politics until the restoration of peace, and it is our impression that the legislative body has acceded to his request in a most satisfactory manner. The division on questions which have come to a vote in both houses has in nearly every case been non-partisan and rather along pro-war or pacifist lines. It would appear to us that Mr. Wilson himself has now become the first to inject a political aspect into the legislative situation. Whether or not the voters of the country will accept Mr. Wilson's dictum on the patriotism issue remains to be seen—personally we are of the opinion that the appeal is more likely to harm than to help the Democratic cause.

However the President's remarks may affect the coming elections, they serve to focus attention on the attitude

of the voter—both as an individual and as a class. How should one go about making a decision in this matter? In particular, how should the dyestuff industry vote?

Let us assume—and we do not believe we are far wrong in the assumption—that the patriotism of both parties is equal, that each is equally determined to see the war through to a successful conclusion and to pursue the Hun relentlessly until he shall make an unconditional surrender. This being the case, we have to determine whether patriots who will follow the President blindly, but who possibly represent political policies in regard to internal matters which we believe unsound, will make better legislators and will better serve the country's interests as a whole than another set of patriots who will follow him perhaps a little less blindly but with whose political convictions in other-than-war matters we are in perfect accord.

It must be borne in mind that the new Congress will, in all probability, outlive the war, and that it will fall to the lot of the gentlemen whom we are to elect next week to shape the legislation which will govern our destinies in the period immediately succeeding the close of hostilities. The destiny of the American Dyestuff Industry is closely bound up in the matter of tariff legislation—and this is one of the questions upon which the new Congress will be called upon to act.

The REPORTER recently sent to many of its readers a questionnaire, one of the sections of which had to do with the tariff. From the answers received we are certain that both manufacturers and consumers of dyestuffs are a solid unit in wishing to see the American industry protected. It is much more likely that the necessary protection will be granted by a body of legislators whose political beliefs favor high tariffs as a general principle than by one whose economic theories favor a tariff for revenue only.

We would therefore urge upon all elements in the industry the necessity
(Continued on page 12)

THE PRESIDENT AND POLITICS

(Continued from page 8)

of giving this matter serious consideration before going to the polls. It is our firm conviction that a Republican Congress will prosecute the war with every bit as much vigor as will a Democratic Congress, and we are equally convinced that in the period following the war a Republican Congress will serve the welfare of the country in general and of the Dyestuff Industry in particular much more truly than will a Democratic body. Hence, we say once more, consider well before you vote.

AMERICAN NOMENCLATURE

(Continued from page 7)

when he finds on making the appropriate dye tests that each series consists of approximately the same dyes as each of the others. There is nearly always a Direct Blue 2B and a Chrysamin (and once in a while a sad combination of the two called green), then a brown of the most common type and perhaps a Congo Red. The remainder of each line is other fairly common colors and a few that may be for the moment specialized.

Now what good comes to either the manufacturer or consumer in using fantastic names or even a variety of simple names for any one individual color? Why not sell the blue as Direct Blue 2B if that name has become associated with a certain dyestuff, as it apparently has; similarly, Chrysamin and Congo Red. These materials must by this time have got down to where they are purchased on a money value basis, and anyone who makes any pretense of testing dye supplies knows what they are regardless of the name.

We can readily understand how this condition has come about in the stress of rapid development in such a difficult field by a number of isolated plants. In some cases a company is selling a dye under a variety of names to a number of consumers. To all appearances a color sold in this way is often the

same strength and price. Even if this is true, and more particularly if it is not, the practice is certainly a step away from standardization.

At times the writer has received either samples or shipments of the same color from the same maker under different names. The difference seemed to be accidental, and while usually not serious, may easily lead to confusion. If a sample is offered as Diazan Navy Blue 3R and the first delivery is marked Direct Dark Blue 3R, one may take a chance and start using it, but it is safer to make inquiries or tests, and both involve delay. This has happened a good many times in one way or another with several different manufacturers, and is undesirable from the maker's point of view as well as from the user's. Probably these lapses will disappear as office and sales organizations are perfected.

Perhaps as peculiar a case as yet observed appeared in the *Textile World Journal*. A manufacturer announced a dye under a certain name, and a few pages further on his exclusive agent in a certain territory announced the same dye under an entirely different name. If other independent firms handle this color in other districts, and each decides that he can name it to better advantage than the manufacturer, and the process goes on for a while, we can truly feel for the compiler of an American Schultz's tables.

As already suggested, no doubt these matters are due more to accident than to intention. The examples are given more to suggest what to avoid than as a criticism of present practice, for such practices are by no means general. Granted that it is desirable to standardize the dyes themselves, it is practically a necessity to have systematic names if the consumer is to be benefited by the first standardization.

In the second place, each dyestuff, with comparatively few exceptions, has a definite chemical composition just as truly as soda ash or sulphuric acid. Except for possible impurities it is just the same whether made in one factory or in another, or whether made by dif-

ferent processes. Its physical properties may vary; for example, the same color may appear in powder or in crystals, or in powder and paste, but in general such differences do not seriously alter the working properties of the final product.

Now suppose that Direct Blue 2B is made by three or four different firms. It is hard to see why one should call it Direct Blue 2B; a second give it a name to fit in with the class name that he applies to all of his direct colors; that is, one like Diamine or Benzo; a third names it after himself or his firm, and a fourth, after the town or city in which his plant happens to be located. We should certainly not care to buy heavy chemicals on that basis.

No doubt the immediate contention will be that the specific name chosen, especially if it involves the manufacturer's name, or some word or phrase suggestive of it, is a guarantee of the quality of that particular product. It is true that such a guarantee is of some value in a time of development when our Blue 2B will be on the market in different strength and perhaps in different tones and brightness due to slight variations in the impurities left in the product by different factories. Small matters do at times seriously affect the use of the colors. Uniformity of deliveries would also be covered by such a real or implied guarantee and in some cases would no doubt serve to direct the business into certain channels in preference to others.

It seems, however, as though any objections raised on this score would be covered by following the usual practice of adding the maker's name after that of the dyestuff. It has always been true that with the exception of a few specialties no dyestuff is properly identified unless the manufacturer's name is used with that of the dye itself. This certainly has all the value that a name can carry in the way of a guarantee, whether of strength or of properties.

Further, it hardly seems appropriate, even in view of the real triumph sometimes involved in bringing a valuable

domestic dye on to the market, to name a dye after any individual unless he be the discoverer of something really new.

So far the suggestions have been purely negative, and in fact the writer does not propose to suggest anything like a complete nomenclature for such a large and complicated branch of organic chemistry. It has apparently taxed the ingenuity of foreign makers, and in fact one wonders from the names finally selected whether they were trying to develop a system or trying not to.

At the present time we have one advantage over them, however. They were working in a largely unexplored field, and no doubt came upon some quite unexpected successes, and a system of dye names could be derived with difficulty, if at all, that would cover the known materials, as well as the new-dyes that were continually being perfected. For the present our case is different, for before venturing out into the entirely unknown, our manufacturers are trying first to make the essential familiar dyestuffs. The constitution and properties of these are known and recorded, notably in Schultz's tables and in the various handbooks issued by the foreign manufacturers.

In other words, all the dyes that we are likely to encounter are already listed (not named) in a fairly systematic manner. Schultz is based in a general way on chemical constitution without regard to dyeing properties, and, on the other hand, the producers' lists are based on dyeing characteristics without regard to constitution. It would seem that a careful study from the two points of view would give us something reasonably simple and of great practical value.

As to what type of names shall be adopted, the writer is inclined to favor very little departure from the old prac-

tice for reasons that will appear later. It is manifestly entirely out of the question to use the true chemical names based upon the composition of the molecules. Nobody would want to say pentamethyl paranosaniline when he means Methyl Violet. In general, also, a set of names abbreviated from these chemical names would not mean much to the dyer, or anybody else, and would be difficult to learn. A large number of words in common use are derived in this way, notably Diamine and Benzo. While these answer their purpose very well, it is desirable to get away from names that stand so distinctively for individual German dye manufacturers.

On the whole, it seems better to choose names that will indicate the properties of the colors in question. Of course, nobody expects to cover all the uses of such a versatile body as BH Black, formerly so widely used as a direct cotton color, a union dye, a speck dye, etc. But since it is classed as a direct dye, why not call it Direct Black BH, instead of each of a half dozen or more makers calling it a separate thing for cotton, still another for union goods, and perhaps a third for speck dyeing?

There are about nine hundred individual dyes. Neglecting lighter shades like pink and gray, they may be divided first into the classes red, orange, yellow, green, blue, violet, black and brown, nine groups. Further, for colors that do not come directly under these classes we already have convenient names in use like khaki, rose, slate, etc.

Each of these main and sub groups should next be divided according to method of application. Among the more prominent of these would be direct, acid, basic, chrome, after-chrome, chromate, sulphur, vat, and possibly print-

ing. Even finer divisions than this can be made if there are a large number of dyes in a given class. Direct cotton colors can be separated into diazotized and developed, after-treated by formaldehyde, or chrome and copper, and so on.

Now if we can realize that there are not the vast number of dyes that there are names, but less than a thousand, it is evident that we have already separated them into fairly small groups, each of which can be indicated by the name of the method of application for one-bath dyes, and if necessary, with an extra word, prefix or letter for the colors applied by two (or more) bath methods. Even applying such a simple sounding system as this to all the known synthetic dyes would be no small task.

The writer would therefore advocate retaining a large number of the old names.

(To be continued)

DESIGN IN RELATION TO FABRIC PRINTING

By D. A. MUNRO

How many of those engaged in the production of printed fabrics have paused in their activities for the purpose of giving serious and analytical consideration to the characteristics which mark the industry and its products as quite distinct in the fabric industries of the world? It would be safe to assert of those engaged upon it in this country that the number is ridiculously small in comparison with the opportunities presented and the vital results attached to such considerations, for undoubtedly the devotion of a reasonable proportion of thought to this end would be amply rewarded with much essential information and useful hints.

WHAT CONSTITUTES VALUE?

We take up an average printed fabric and ask ourselves what are the characteristics which give it a market value? In the first place, we discern that it has a use or utility value, maybe as hangings, furniture covers or dress mate-

rials. This "use value" lies in the fabric itself, and its degree is mainly determined by the quality of the material—the counts of the yarn and the nature of the weave. When reaching the printer's hands it is usually a plain fabric possessing in more or less degree the utility value expected of it. From the standpoint of use, there is no reason why it should not be placed upon the market in that state; and so it might, were it not for the human objection to monotony and the desire for something more than the satisfaction of material wants alone. This something we might call a sense value—sense of sight—it is the addition of this sight value to the fabric which is the work of the printer and gives to the product its distinctive character. Thus we get in the finished article two clearly defined and distinct values lumped together satisfying two equally defined human demands, one utilitarian, the other emotional, so that it may be said the complete printed fabric possesses a body and a soul. The fabric printer's unique vocation is that of giving a soul to the fabric. How often for financial profit this soul is nothing but a spook may be left for individual printers to decide.

UTILITY OF COLOR

It is interesting to note that, apart from its distinct contribution to the total value, this addition often increases the utility value, as, for instance, when the fabrics are covered with decorations, the design and colors of which reduce the necessity for washing to the

minimum, or when the design harmonizes with the use to which the fabric is put. Given two designs printed upon the same quality of fabric, the deciding factor in their sale will accord with the merits of the designs printed upon them. Commercially, merit is conceded a design in accordance with the degree of its success in ministering to the emotions of the purchasers, therefore it follows that the printer whose designs reflect familiarity with the customs—religions, politics and intellect of the peoples catered for—has an advantage over one whose knowledge is only empirical. This type of knowledge is the millstone which hangs round the neck of the British print trade, holding it down until the soul of it has almost left the body, which would have long since happened were it not for the few—so few—pioneers who instill fresh life and spirit, thereby giving the army of empirics their opportunity to resuscitate by piracy the flickering soul of their productions.

Unfortunately, this empirical qualification in their print buyers and salesmen is too often preferred by both merchants and printers because of its cautiousness, its safety, the antithesis of enterprise. How often when drawing attention to the superiority and initiative in the matter of design, displayed by our oversea competitors, does one meet with the soulless comments, "Who makes the money?" "Let those who like go for glory; we're out for brass." They forget that while they are out for, and possibly getting, the "brass," an evil

reputation for shoddiness accrues, while a good one for quality and style attaches to their competitors. This reputation will, in the long run, claim the patronage of that section of the world trade which really matters; for while no doubt there are still possibilities in catering for the uneducated and semi-civilized portion of the world's inhabitants, sight must not be lost of the fact that this exploitable market is being rapidly reduced year by year by reason of the world's progress, which is not only Westernizing the ideas of the East, but also enabling them to produce their own requirements in mediocre articles at a cost we can never hope to compete with again. In these days of highly perfected machinery and standardized chemical formulæ it is possible for partly civilized peoples under suitable direction to produce the bulk of printed fabrics needed, and the only chance for the success of any industry desiring to market its production amongst them in the future will lie in the ability to supply articles bearing the stamp of a higher intelligence.

AVOID THE COMMONPLACE

It behooves us, then, to have a care for the cultivation in our productions of qualities which will distinguish them from the commonplace, and what are these qualities but those already described as of a sight or emotional value? The economically wise will contend that this catering to cheapness was the way to financial success, but the most elementary philosophy should teach us that deterioration of quality is its corollary.

We have thought and acted in figures at the expense of letters, with the inevitable result that we became mere operatives and empirics instead of initiators and inspirers.

How to reflect this intelligence in our productions is the problem to be solved, and the solution will certainly involve the discarding of many previous methods and practices, foremost amongst them the lackadaisical manner in which designing, engraving and sampling was treated. It is with those who have the control of those factors in the production of printed fabrics that the responsibility for reform will rest. A correct appreciation of them will need to be cultivated, and the low esteem and low value set upon them in pre-war times abandoned.

Especially will it be needful to realize that the production of designs is controlled by an entirely different set of circumstances to that of manufactured articles, for one may without seriously affecting the quality of what is called the workmanship of machine-made goods, practice the subtle art of buying from the cheapest manufacturer, engendering a competition which sets to work the supplier's capacity for economically purchasing his raw material, organizing his labor and perfecting his machinery.

But with the designer whose raw material is his experience, knowledge and skill, whose machinery is his own body and soul, and whose capacity for organization can only be brought to bear upon the amount of food consumed and the

numbers of hours he can keep awake, such practice produces an entirely different result.

Take as illustration a weaver with his power loom and a designer with his paints and brushes. The full capacity of the weaver's loom is, say, 12 yards of cloth per hour, and that cloth perfect; no amount of extra time, thought or study on the part of the weaver would affect the quality of the fabric; but if he falls a victim to the subtle art he may by speeding up his loom, by lessening his picks and ends, so meet his client's price that he may actually be benefiting financially.

But with the designer extra time, thought and study does materially affect the quality of his productions. There exists hardly any designer worthy of the name who could not improve his work every time he tried, and should he fall a victim to the ways of commerce he can only circumvent it by curtailment of thought, time and study, unless he reduces his meals and his hours of sleep, which would immediately react on his capacity to produce.

The realization of this distinction twixt the product of the designer and that of a machine, by those who have the capacity to appreciate the value of

good design, must present a sound business reason for treating the designer and his work as essentially different from that of mechanical production. Providing he is capable, freeing the designer from restriction in thought and experiment has always proved a wise speculation; while, on the other hand, the practice of economy at this stage of the fabric printer's work can no more recommend itself than can that of obtaining the services of the cheapest pot-boiler for the production of excellent pictures. Certainly, if economy must be practiced this is the wrong place, for a few shillings or even pounds at this stage could not materially affect the profit or loss upon a transaction worth considering, but might make all the difference between a moderate and a huge success.

INTEREST THE DESIGNER

Practical demonstration based upon the foregoing consideration by more than one enterprising firm has proved its soundness, for by a scheme of remuneration on results the maximum expenditure of thought, experiment and interest on the part of the designer has been induced, proving eminently satisfactory to both parties, the designer con-

centrating all his energies upon his work with the full knowledge that the more time and thought he expends upon it the greater his reward, and the merchant or printer, strengthened by the fact that behind him he has a designer keenly interested in the success of his goods right from their inception, and ever on the alert for new ideas and developments.

The use of the designer should not, as it invariably does, cease with the actual design: no design ought to be engraved and no impression passed without his participation in the instructions and inspection thereof. Many a good design has lost all its subtleties for the want of a sympathetic connection between the designer who knows them and the engraver who guesses at them, oftentimes mistaking virtues for faults and faults for intentions; for far too long has the average engraving or designs been carried out on the automatic system, losing in the process even more of the soul of the inspirer than is lost in the reproduction of a melody by the automatic piano-player.

GOOD DESIGNS AND BAD COLORING

Nor shall his services be neglected in the important business of coloring and sampling. It has broken the heart of many a designer to see his work not only badly interpreted by the engraver, but ruined by faulty and often grossly ignorant color and tone schemes. It may safely be set down as a fact that not one in a hundred whose business it is to draft out the colorings for a design possesses any other than routine knowledge as a qualification for the work, possibly the most vital part of the printer's craft, and certainly calling for the exercise of an intimate acquaintance with the laws of color harmonies, and

the bringing of that knowledge to bear upon each design in accordance with its own peculiar construction. The amount of ignorance existing in this department is displayed by the frequency with which gamuts of other, and often anatomically different, designs are used in lieu of intelligence.

To sum up, the solution of the problem lies in enlisting an appreciable proportion of art directorship in conducting a print works. It would hardly be correct to say a larger proportion, seeing that prior to the war such directorship was unknown and unvalued in a British print works, but many of our ideas have changed since. May not a change have come over the idea that success in the industry lies in copying German, Russian, Italian and French prints in staffing a works and warehouse with employees mostly ignorant of the rudiments of that which is the very soul of the industry, in ignoring the potential talent of our own countrymen and revealing to foreign competitors our business plans by commissioning their designers as inceptors? It should, for since 1914 we have had demonstrations galore that similar methods in the serious business we have on hand are useless but that given other and more intellectual methods we have been able to hold our own, our countrymen, given the opportunity, proving themselves the equal of friends and foes in all things calling for initiative, knowledge, enterprise and thoroughness.—*Dyer and Calico Printer.*

NOTES OF THE TRADE

Work will be started at once to replace the damage done by the recent disastrous explosion at the Aetna Chemical Company's plant, Heidelberg, Pa. The fusion building was destroyed by the fire which followed the explosion.

A \$25,000 addition to its organic laboratory will be erected by the E. I. du Pont de Nemours Company, Wilmington, Del. The structure will be 45 x 50 feet, two-tstory and basement.



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AMERICAN DYESTUFF REPORTER

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"Circulated Everywhere Dyestuffs are Used"

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JAPAN WARNS AMERICAN DYE MANUFACTURERS

Director of Large Japanese Textile Association Says We Must Amend Our Export Methods if We Are to Retain Our Oriental Business, But That It Can Be Kept and Extended if We Act Quickly

THE publisher of the REPORTER was privileged last week to hold a rather lengthy conversation with Kiichi Mizutani, managing director of the Yamato Shokai, Ltd., Osaka, Japan—an association of several of the largest Japanese textile mills. Mr. Mizutani comes to America for a brief trip on behalf of these mills—in which his family has large financial interests—and also as representative of the Kyokuto Glass Company, Osaka, of which concern he is a director. He was further personally requested by the president of the Osaka Chamber of Commerce to investigate matters concerning the dyestuff situation in America, particularly with reference to our export practices. This latter commission is of unusual importance to the American dyestuff manufacturers, as Osaka is the largest dyestuff and color center in the Orient.

Although Mr. Mizutani gave us a very clear insight into general commercial conditions in Japan, and dwelt particularly upon the possibilities of the extension not only of commercial, but

of political relations between the two countries, we were, of course, primarily interested in what he had to say of the present status and future outlook for American-made dyes in the Japanese market.

In this connection and in his official capacity Mr. Mizutani brings to the American dye manufacturers a distinct warning that if they are to retain and increase their export business in Japan they must adopt very different methods from those which have prevailed up to the present time. Mr. Mizutani said that it was to-day very difficult, if not impossible, to sell American-made dyes in Japan on sample—that the Japanese consumers had become very distrustful of American dyestuffs and colors because of the fact, established through repeated experience, that goods received were, in a majority of cases, decidedly inferior to the samples from which orders had been placed. The result of this is that practically all business in American colors at the present time must be done on speculation by Japanese importing houses. In other words,

the Japanese importer, without being in possession of actual re-orders, must nevertheless order from America and await the arrival of the dyes themselves before he can dispose of them to the consumer. It is self-evident that a condition of this sort places a great burden on the importing houses and one which they ought not to be called upon to bear.

During the time prior to the war when the German firms were active in the Japanese market, goods were always bought on sample and were invariably found to be quite up to standard upon their arrival. In the early days of the war when German importations were cut off the Japanese turned with confidence to the offerings of American dyes and, finding the samples satisfactory, placed their orders thereon. When the goods themselves arrived, however, it was in many cases found that they were inferior to the samples submitted; in some cases so much so as to be practically worthless. It is, therefore, no wonder that the con-

fidence of the Japanese houses in American dyestuffs has been destroyed, and it will take a considerable length of time to regain lost good-will.

Mr. Mizutani wishes it to be clearly understood that neither he nor other well-informed Japanese are disposed to blame the American manufacturer in this connection. It is his belief that the goods have, in practically all cases, left the manufacturers' hands in proper condition, but that in course of transshipment, probably while in the hands of so-called exporters of dyestuffs in this country, they have been tampered with. Mr. Mizutani said it was his experience that where it had been possible to get American-made colors in unadulterated form they had been found to be eminently satisfactory, and so far as the manufacturing end went there was no reason why America should not secure and retain a very large percentage of the Japanese business. But he made it quite clear that if present merchandising methods were persisted in, the Japanese would turn eagerly to German or other firms who adopted more reputable business methods.

The remedy for the existing conditions, which Mr. Mizutani recommends, is that each American manufacturer who desires to compete for the Japanese business should settle upon one large and reputable exporting or importing house, of which there are several, which would act as their exclusive agents for the Japanese market. Mr. Mizutani pointed out that if goods were shipped direct from the factory to a consignee in some Japanese city they were practically certain to arrive in the condition shipped, and that there was no disposition on the part of the Japanese to tamper with them after the goods had once arrived in Japan. Mr.

Mizutani also strongly recommends that goods be sold through the Japanese importer under the manufacturer's own name or brand. He suggests that the agency be confined to one firm, because this will eliminate competition on the same brand of goods and do away with any disposition toward price-cutting between firms buying from the same manufacturer. At the present time he says that it is not uncommon to find goods purporting to have been manufactured by the same concern in America being offered in the Japanese market by a half dozen different dealers at different prices and in entirely different conditions, some of the goods being possibly 100 per cent pure and others reduced to 30 per cent strength.

Under the conditions which have prevailed in the recent past where an order was taken in Japan by a representative of a so-called exporting house, and where the goods, when delivered, have failed to be in accordance with sample, the exporters have, in all cases, shifted

the blame to the manufacturer, claiming that the goods were delivered by them in the same condition as received from him. The distances have been so great and oftentimes the goods have passed through so many hands in transit that it has been, in a majority of cases, impossible to determine who really was the guilty party, but it is Mr. Mizutani's belief that the adulteration has been effected somewhere on the way and before the arrival of the goods in Japan.

It is Mr. Mizutani's opinion that if the American manufacturers, even at this late day, will adopt the plan he suggests and, after careful investigation, establish relations with a reputable Japanese importing house, that they can overcome the bad repute into which American-made dyes have fallen. Mr. Mizutani points out that established commercial connections are of more than ordinary value in Japan, and that the American manufacturers and their agents should not be too greatly concerned for their immediate profits.

Business in the Orient is not transacted as quickly or on as keenly a competitive basis as in this country, and after an importing house has once gained a market with Japanese consumers on products for which it is agent it would be an extremely difficult and necessarily tedious matter for any outside competitor to get this business away from them, even though there might be slight differences in price. This being the case, it is Mr. Mizutani's belief that if the American manufacturers can effect these connections before the Germans are again in the field it will be quite possible for them to retain the markets against German competition. There is no doubt, he says, that the Japanese as a whole feel much more kindly disposed toward the Americans than towards the Germans, and that other things being anywhere near equal they would prefer giving their patronage to American manufacturers.

Summing up, Mr. Mizutani says that the American dye manufacturers have clearly failed in the first step of their efforts to capture the Japanese markets, even though expansion of business is so great since 1915. But he believes if the American manufacturers will take immediate steps to rectify the wrong that has been done and will merchandise their products in Japan through reputable importing houses, under the manufacturer's own name or brand, and will stand behind their products as they do in this country, that there is no doubt in his mind but that satisfactory and permanent relations can be built up. Mr. Mizutani lays stress, however, on the fact that if this is to be accomplished no time is to be wasted, and that any American manufacturer who wishes to obtain and keep a share of the Japanese patronage must immediately take steps along the lines which he points out.

Mr. Mizutani submitted figures showing the value in dollars of American-made dyes exported to Japan for the last four fiscal years ended June 30: In 1914 there were none; in 1916, \$166,574; in 1917, \$510,606; in 1918, \$3,233,-

333. The total export of American-made dyestuffs for the fiscal year ended June 30, 1918, amounted to \$16,921,888, from which it will be seen that practically one-fifth of our total export went into Japan.

Mr. Mizutani received his education at Columbia and Yale Universities and is a strong believer in the benefits to be derived both by America and Japan from the extending and cementing of their commercial relations. Neither he nor those whom he represents have any "axe to grind" in the matter of dyestuffs, other than that he is desirous of seeing the textile mills, in which he is financially interested, properly supplied with American-made colors. It is our belief that Mr. Mizutani's interest in the American dyestuff industry is entirely altruistic, that he speaks with absolute authority on conditions in Japan at the moment, and that American manufacturers of dyestuffs would do well to heed his words.

\$600,000 Du Pont Gift to War Work Campaign

The du Pont Company's directors have voted a dividend of 1 per cent, amounting to \$600,000, to the United States War Work campaign, which begins its drive for \$170,500,000 on Nov. 11. A year ago the du Pont industries declared a 1 per cent dividend for the Red Cross, and followed this with a 2 per cent dividend for the second Red Cross campaign.

The National Aniline & Chemical Company has awarded the contract for the construction of its proposed new three-story manufacturing building at the company's Buffalo plant.

With a capital of \$100,000, the Century National Chemical Company has been incorporated under the laws of New Jersey by Jane D. Keller, William D. Lickel and Franklin J. Teller. The plant of the company will be located at Paterson, that State.

NOMENCLATURE OF AMERICAN DYES

(Concluded from last week)

At this point we may bring in another important factor. Other countries are developing their own dyestuff industries, notably England, France, and, to a certain extent, Japan. Switzerland has long been in the field on a fairly large scale. Now from a "scientific" point of view dyes should have an international nomenclature, so that the names used in all countries will be the same. This does not bar the translation of words from one language to another, as that is common enough to-day. From the "practical" point of view it is equally important. What will our English and French textile journals mean to us if their dyes are given new names with which we are not familiar? On the other hand, how will they become familiar with our colors? The answer is that for the present we must talk in a common language in this respect. Some makers understand this, and offerings of dyes in both American and English advertising often include the names of the German types along with the new names of the colors. This practice seems necessary for the intelligent use of the new colors, and while it is in vogue there is no apparent gain from having the new name. It only adds one more burden to the consumer's memory.

Not only will there be confusion in the trade papers from a too free adoption of new names, but it will apply more or less throughout the whole textile and chemical literature. Textile students using existing textbooks will learn the old dye names and types and have no immediate means of associating the data there acquired with our

present American production if the latter departs too widely from the old designations. Organic chemistries abound in the trade names of dyestuffs, some of which, like Indigo and Alizarin, are about as firmly established as chemical names of organic bodies as are Aniline or Benzol. All available tables of dyes, methods of application, identification and analysis, are in terms of "German dyes," so for the present, if one desires to ascertain the chemical nature of an individual dye by any ordinary method the answer will be one of the old dye names. However the American or other manufacturer tries to get away from the old designation, it is bound to crop up from time to time, and it is ten to one that he will have to explain the similarity to each consumer just as soon as he begins putting out anything beyond the simplest common colors.

After the war the German companies will no doubt standardize as they have never done before, probably in names

(Continued on page 12)

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 butions appreciated

A. P. HOWES, Editor and Publisher

THE CENSUS AGAIN

Additional light on the manner in which producers of coal-tar products assisted the U. S. Tariff Commission in compiling the *Census of Dyes and Coal-Tar Chemicals*, 1917, is contained in a letter from Dr. F. W. Taussig, chairman of that body, in which he amplifies and corrects several minor details of the REPORTER'S review of the census, and clears up a subject which had been causing considerable speculation. When we undertook (Oct. 17) to "boil down" this document, we estimated about 21,000 employees to be engaged in the industry, although calling attention to the fact that this estimate was based upon insufficient information. Thanks to Dr. Taussig's interest, we are now able to inform our readers that this figure was placed too high. Dr. Taussig's letter follows:

"... Your review of this census has been read with interest and the sympathetic tone is much appreciated. We shall be glad to receive the succeeding article to which you refer in the concluding paragraph of the review.

"A few minor matters call for comment. You state (page 6, second column), 'Some of the firms manufacturing coal-tar products declined to make returns.' We have a detailed report from every firm known to us which was engaged in manufacturing operations during 1917, including the twelve firms which requested us not to publish their names.

"Many firms which advertise themselves as manufacturers reported to us

that they were dealers only, and were, therefore, omitted from our list. If you know of any firms who were actual manufacturers during 1917 which are omitted from the list, we request you to send us their names.

"The twelve firms which objected to the publication of their names nearly all had a good reason for this request. Some of them had ceased operations, others were textile mills which made a few dyes for their own use and not for sale, and others were still operating on an experimental basis, and not prepared to make regular deliveries.

"You state 'while yet others refused for business reasons to permit the publication of statements in pounds of various finished products which they were producing.' Our general policy was not to publish the totals for the production of any dye or other product, if the number of producers was so small that the publication would disclose the output of any firm to its rivals. On account of the great importance of indigo and its exceptional treatment in the law, we secured the consent of the only producer during 1917 to the publication of the production. This was, however, the only exception to our general principle.

"Your estimate of 21,000 employees is probably too high, because the missing fourteen firms who did not report their employees were small producers of coal-tar products. Most of them were concerns primarily engaged in other lines of manufacture, such as textile mills, ink manufacturers and even one soap maker. The coal-tar products were mostly made incidentally in connection with their laboratories or dye houses by men who devoted most of their time to other work.

"If you can furnish us with a list of additional firms which began manufacturing operations during 1918 it will be helpful in taking our census for 1918.

"Very truly yours,

"F. W. TAUSSIG, Chairman."

If there are any such firms at present, we would urge them to communicate with the Tariff Commission as soon as possible.

NOMENCLATURE OF AMERICAN DYES

(Continued from page 9)

as well as products. They will very likely operate as one company, and will of necessity offer a pretty straight line of colors. It is now a fair question whether this type of competition—for although present events will put a serious “crimp” in it the competition will still be there—will be best met by colors having essentially the same names as the identical German colors or by the same colors having a new group of names quite different from the old familiar names under which these old colors are being sold. This is a question involving factors of psychology and salesmanship that are beyond the province of the present discussion, but it is a strictly business proposition that will stand serious study. While new names make good patriotic advertising and are highly commendable for that reason, will they help or hinder in actual dye sales under intense competition? That is what American makers must work for to create a permanent industry.

There is another quite important point to consider, and that is how many of the common dye names are really German. To be sure, the larger number of them were coined by German makers, and all that have come to stand distinctly for particular German firms can be changed, possibly along lines already suggested, without causing serious confusion. The remainder fall for the most part into several classes which are more easily indicated by examples than by description. A surprisingly large number of these are no more Teutonic than they are American or English. Among these are a number like Columbia Yellow, Nile Blue, Sun Yellow, Apollo Red, Chicago Blue, Indian Yellow, Palatine Scarlet, Sudan Brown, Congo Red, Meldolas Blue, Philadelphia Yellow, China Green, Neptune Blue and various Victoria colors.

Then there are a number with names derived from a raw material or from some feature of the chemical constitu-

tion; for example, Acridine Colors, Naphthol Green, Naphthol Blue-Black, and Naphthol Yellows, Stilbene and Aniline Yellows, and Anthracene Colors.

A third large class of non-German names comprises a very large number of members derived from properties or uses of the colors in question. A few examples will suffice—Fast Navy Blue, Fast Cotton Blue, Neutral Blue, Milling Blue, Silk Gray, Leather Brown, Cotton Yellow, Direct Yellow, Fast Light Yellow, Mordant Yellow, Wool Violet, Cloth Red, and so on.

Then there are a lot of names that appear simply to have been invented, that seem to be derived from nothing in particular and stand only for the individual dye to which they are applied.

Of the comparatively few names that are very distinctly German, Bismarck Brown is probably the most common. We would be glad to see this color called Basic Brown or any other reasonable name. However, such renaming misses its point, if, as in a notice that came to the writer's desk from an American manufacturer, we find listed Methyl Violet, Methylene Blue, Basic Brown and others, and then see at the bottom of the sheet a note stating that Basic Brown was formerly called Bismarck Brown.

However desirable it may be, it is hard to see how we can get away from comparing our new colors with the old, because in spite of the pre-war confusion many of the old names do stand for fairly definite strengths and properties. They are the things with which the dye user is most familiar and he is found to work from the old colors, with which he has had experience, slowly over to the new, which are in many respects slightly different. It is perhaps entirely a matter of opinion, but it seems as though the dyer would be the less inclined to take kindly to the new products the more they are burdened with a variety of unfamiliar names.

We have said nothing about strength. It is to be presumed that the new or-

ganization will do work along these lines soon. Certain definite standards of reference must be established, then if any maker wishes to depart from them, he can designate his strength by a percentage added to the dye name. Let us hope, however, that we get the 300 per cent and the 500 per cent colors at once. No doubt the scheme will cause some complaint from the dealer who wishes to salt his Benzo-purpurine and sell it for a Direct Pink. It wouldn't sound well to offer Benzo-purpurine 4B 10 per cent at \$4 per pound, and that is one reason why we favor standardization. It should save us an endless amount of useless testing both in the laboratory and dye house.

So far we have intended to give an impartial discussion of the various points raised, and now to clarify the issue let us briefly summarize. Granting that we want to use American dyes, that, in fact, we are strongly prejudiced in their favor, we only ask that their use be made as easy for us as possible. Next, we want them uniform in strength and shade. Some of the manufacturers are getting us highly commendable results in this respect. Then we would like them uniform in name, so that we will know what we are getting. Strictly speaking, we do not care what any dye is called as long as we know what it is and how to use it. In practice, however, we would prefer not to have too great a variety of altogether new and strange names.

Assuming that new and very distinctive American names are advisable, we

think a number of legitimate objections can be raised against too radical changes. If due consideration by the various parties concerned shows that this is not true, then let us set about devising a systematic scheme based, if possible, either on uses and properties, or on the chemical nature of the individual colors. Until this is done let us not confuse matters by a hit-or-miss collection of names devised by anybody and everybody, but settle on the minimum number of simple descriptive names required to properly identify our colors even if we do retain some of the less objectionable of the old ones.

The General Chemical Company has completed arrangements for the erection of a new two-story plant, 40 x 115 feet, to be located at Halle and Washington Avenues, Laurel Hill, Long Island City, N. Y. The cost of the structure will be \$35,000, and plans have already been filed.

The Persol Chemical Company has been incorporated at Buffalo, N. Y., with a capital of \$100,000 by N. Owitz, N. A. Molin and D. Levin.

"STANDARDIZE, STABILIZE AND ECONOMIZE"

PRESIDENT BODE, OF TEXTILE COLOR
CARD ASSOCIATION, CALLS FOR
GREATER DOMESTIC SELF-
RELIANCE

The growing demand for standardization in the textile and color industries formed the keynote of the meeting of the Textile Color Card Association of the United States, held last week at the Waldorf-Astoria, and it was this theme which dominated the opening address of Frederick Bode, president of the organization, who declared that regardless of what influence European thought might have on America after the war in the matter of color, European information was received in this country several months too late to be of real value. Their information, he said, was received at about the same time as the American manufacturer got out his samples, with the result that about 90 per cent of the American production must be in American colors. He called attention also to the fact that in the last several seasons the European cards coming out several months after the American card confirmed America's selections and did not conflict with them. He said further, that the American color atmosphere was absolutely necessary if we were to continue our export business.

Mr. Bode was followed by William J. Matheson, president of the National Aniline & Chemical Company. Mr. Matheson reviewed the progress of the

American dyestuff industry from the beginning of the war to the present time, and was vigorously applauded.

Other speakers at the meeting included H. Schniewind, Jr., president of the Susquehanna Silk Mills and vice-president of the Silk Association of America, who promised the continued support of the silk industry; A. L. Gifford, vice-president of the Textile Color Card Association and member of the War Industries Board; John Cutter, also of the Board, who said that standardization benefited the Government, the manufacturers, the distributors and the general public alike; Charles Auger, president of the National Silk Dyeing Company, who averred that the color card was always favored by the dyers; Franklin Simon, who declared that his firm had received fewer complaints in 1917 about fabrics dyed with American dyes than it had ever received in any previous year about fabrics dyed with European dyestuffs, and Mrs. Hazel Adler, who had for her subject, "A Scientific System of Natural Color Art."

President Bode's address is here reproduced in full:

"When four years ago a group of manufacturers and merchants of this country were alarmed that they might not receive the usual color inspiration from foreign markets that they had been accustomed to, they concluded to form the Textile Color Card Association of the United States.

"The ideals set forth and the objects

to be attained were color standardization and stabilization, the introduction of seasonal tendencies, and general color information. With these objects in mind, a Standard Color Card was created first, and subsequently seasonal cards were introduced, and from time to time bulletins have been issued giving color information.

"The standard card, we believe, has met all of the conditions we had a right to expect, and now, four years later, under war conditions, it is a real salvation in the problem of economy and conservation. Time has demonstrated the wisdom of the enterprise. However, the success achieved is not a circumstance to the much greater benefit to be obtained, provided the manufacturers and distributors will take advantage of the means at their command.

"War conditions are curtailing production of all materials for domestic use; in some cases it is as high as 50 per cent and in some it is more. It follows, therefore, that economy in production is the paramount issue, and any move to bring production into a safer channel is a move to be welcomed. The question arises, how can we bring production of the industries into a safer channel? How can we overcome the reduction of production and still maintain the volume of business and meet the demand? In ordinary times we know we have a large volume of unsalable merchandise, due very often to overproduction, or overbuying, but more frequently due to wrong color selection, with a consequent loss that must be overcome. The difficulty is that each manufacturer, whether of textiles or wearing apparel, as well as distributor, goes his own way without any thought of cohesion or uniform effort.

This is one of the causes of so much unsalable merchandise.

"X desires to build a garment, a hat, etc. He requires several materials in the creation. In looking for his supply, he find A has a line of colors which do not correspond with the colors of B, C or D. Manufacturers of garments requiring chiffon, silk, etc., in any given color, each demanding his own shade, which invariably differs from the others, magnifies the demand tenfold. Would not one and the same shade be sufficient? Is there any reason why we should have ten shades of white?

"In creating the Standard Color Card, twenty-five manufacturers were invited to submit a sample which should represent their conception or choice of 108 colors, for which the names were furnished, and which was the number required for the first issue of the Standard Color Card. Twenty-three manufacturers responded, with the result that all differed in their conception and not two submitted samples alike.

"If the manufacturers and distributors were to subscribe to the merits of the Standard Color Card, and make their selection therefrom, then the consumption would be centralized on the 128 shades of the Standard Color Card, whereas now there are at least 5,000 shades covering the same consumption.

"I maintain that in the interest of economic production a well-defined program is absolutely essential. The exigency of the times demands it. The variety of colors now used should be reduced, thereby minimizing the risk and increasing the value of the goods that are produced.

It is a well-known fact that 90 per cent of color consumption focuses each season on four or five shades, and that the 10 per cent consumption is in what may be termed 'the season's whims and fancies.' There is every reason why all manufacturers of textiles, as well as wearing apparel, and distributors of merchandise, should subscribe to the adoption and use of the Standard Color Card.

"Shakespeare said, 'There is a tide in the affairs of men, which, taken at the flood, leads on to fortune.' So the time is ripe for us to standardize, stabilize and economize. The opportunity is directly before us; it is within our grasp. Shall we seize it, or shall we remain indifferent to it? It is not only to our own interest, but it is a patriotic duty we owe to our country to improve the condition of the industry, and thereby become more self-reliant and able to meet foreign competition. But this is

not all, we have a further duty to perform if we shall be alert to our opportunity to enhance the scope of our activity.

"Everybody recognizes that general conditions after the war will undergo a decided change, that the adjustment to these conditions will demand the most careful analysis and consideration. In the meantime we should school ourselves and prepare the way.

"There is not a manufacturer here that will not agree but that we are to a very large extent independent as far as the production of materials is concerned, but when it comes to color we are still more or less under the influence of foreign markets. This is wrong, and should be remedied. We should bring together at the proper time all of the elements interested in color, decide upon a program and present it to the public. It is up to us to create a color atmosphere typical of the United States. Such a program the Textile Color Card Association is prepared to inaugurate, and respectfully invites all of the interests in its participation.

"The support which we have received for our seasonal cards warrants us to lay greater stress upon them than has been possible up to now. Should we confine ourselves to the standard card alone, we would not meet the demand that comes each season for something new, and while the general demand is largely for the staple colors, we must not allow our imagination or artistic temperament to stagnate, but must offer sufficient latitude in which to indulge

its fancy. We must encourage our artists and take advantage of their inspiration to assist in creating a color atmosphere typical of the United States.

"There will always be the enterprising merchants to present foreign color tendencies, as well as the artist who will seek inspiration in foreign centers. Such enterprise should not be discouraged, but welcomed, for while we wish to be self-reliant, we must also take advantage of all the information that is good to be followed.

"The preparation which is necessary in the general process of production is of such duration as will demand at least six to eight months. In order that color suggestions may be of practical use to the manufacturer, they must be ready for him in February and March for the Fall, and August and September for the Spring. Foreign suggestions ordinarily come too late to be of service for the respective season, and have to be carried out to a large extent in foreign material. This in itself makes it evident that we have an opportunity which cannot be ignored and should be embraced.

"The Textile Color Card Association believing that it has the machinery to

be helpful to the proper development of a color program for our industries, is prepared to inaugurate a movement by which it shall bring together the different elements that compose the industry of the United States.

"Each branch of the industries, whether manufacturers of textiles, wearing apparel, distributors of merchandise, dyers, dyestuff manufacturers, shall be consulted when the selection and adoption of seasonal color suggestion is undertaken. In this way a color program may be prepared which will be the best thought on color to be obtained in this country.

"The association respectfully invites one and all to participate in the movement to create a color atmosphere typical of the United States.

"We need especially the influence of the press to aid us in carrying out the program. It is not an easy task, but if we shall be loyal to our country, loyal to the cause, we shall be amply rewarded.

"In conclusion, I wish to say that the loyal support of our membership has made it possible for the association to survive. The profit derived from the sale of cards has not been sufficient to maintain an efficient service. Without

a supporting membership, the organization could not exist. It is a work that is altruistic and should be supported for the common good. Let us improve the splendid foundation laid by a superstructure which shall spell progress, independency and self-reliance, a color atmosphere of the United States."

DU PONT "DOES ITS BIT"

The magnificent total of subscriptions made by the textile industries to the Fourth Liberty Loan was materially increased by the du Pont Company, which, through its dyestuff department, is closely identified with textiles.

The du Pont Company set aside a total of \$10,000,000 for distribution throughout the country. Of this \$5,000,000 went to the State of Delaware, the home of the corporation, but more than half of the remaining \$5,000,000 was allotted to the textile industries of the East.

These allotments were made in three subscriptions placed in Boston, New York and Philadelphia. The Boston subscription of \$500,000 was for distribution by the general committee of the textile industries in New England. The \$1,500,000 which was placed in New York was allotted to the various groups by the wholesale dry goods trade committee, which set aside a share for the cotton, woolen and silk industry. Philadelphia's textile industries were allotted \$800,000, making a total subscription at these three points of \$2,800,000.

NOTES OF THE TRADE

An office has been opened in the Realty Building, Charlotte, N. C., by the Dicks-David Company, Inc., manufacturers of aniline dyestuffs, New York. Ben R. Dabbs, former manager

of the Atlanta office of the National Aniline & Chemical Company, will be Southern manager in charge.

New directors of the Semet-Solvay Company, Syracuse, N. Y., elected at the annual meeting of stockholders, are: E. L. Pierce, H. H. S. Handy, J. G. Hazard, E. C. Witherby, C. T. Boynton, W. B. Cogswell, E. D. Winkworth, Nathan L. Miller and A. W. Hudson.

The headquarters of the Essex Aniline Works, Inc., has been moved to 39 Oliver Street, Boston, Mass., and the concern has added a staff of chemists for research work and to co-operate with customers in the solution of dyeing problems. The products of the company are now being sold direct.

With a capital of \$100,000, the Century National Chemical Company has been incorporated at Paterson, N. J., to manufacture and deal in chemicals. The incorporators are Franklin J. Keller, J. D. Keller and W. J. Lickel.

Port Arthur, Texas, will be the location of the new plant to be constructed for the manufacture of sulphuric acid by the Southern Acid & Sulphur Company, East St. Louis, Ill.

The United Dyewood Corporation has declared quarterly dividends of $1\frac{3}{4}$ per cent on the preferred and $1\frac{1}{2}$ per cent on the common stock, both payable October 1 to stockholders of record September 14.

Work will be begun in the near future by the Charlestown Chemical, Bell, near Charlestown, W. Va., on the rebuilding the company's plant, recently destroyed by fire with a total loss estimated at about \$300,000.

About 200 additional bungalows for the use of workers engaged in the local dye works of the company will be erected by the E. I. du Pont de Nemours Company, Deep Water Point, N. J. Plans for the dwellings have been already prepared.



AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, November 11, 1918

No. 20

GENTLEMEN, HOW DID YOU FEEL?

The Peace Report Furnished the Dye Industry with a Thrill
All Its Own—The Determination to Nationalize the Industry
Should Have Headed the Resultant List of Good Resolutions

NEVER again within our time, in all likelihood, will we witness scenes and experience emotions which could satisfactorily duplicate those engendered last Thursday when, for a while, the country believed the Great War to be over. According to a misleading despatch, Wilhelm the Warrior and the six lordly louts were finally about to face their terrible day of reckoning. Apparently, the overthrow of the most despicable set of rascals that ever tried to have their will of the world was an accomplished fact. The Boche, to borrow a Britishism, had been "bashed," and nothing remained but to sit back and enjoy the inquest.

No wonder delirium prevailed! Germany had surrendered; hostilities had ceased, and the pent-up emotions of many months were at last unleashed. Within an incredibly short space of time New York had become a howling pandemonium. Whistles, bells, automobile horns, sirens and human throats were strained to the utmost to swell the din, while tons of paper, hastily torn to bits and flung from office windows, sparkled and scintillated in the sun as it fluttered downward to bury

pedestrians with a white mantle worthy the best efforts of a blizzard.

And throughout the entire country the same scenes, with minor variations, were being enacted. The day will always be unique, and anything which happens when peace is really a fact will be something of an anti-climax. Never again will quite the same frenzy and abandon grip the whole nation at once as it did on this occasion. Organized local celebrations there will be in abundance, especially when the boys begin to come back, and no doubt a day will be set aside for these, as was the case after the Spanish-American war; nevertheless, it requires the united efforts of 100,000,000 people with but a single thought in order to set up the emotional current with which the very atmosphere seemed to be charged on Thursday. No matter where one happened to be, there was no escaping the carnival spirit, and a glorious time was held by all except the police, the newspapermen and the street cleaning department.

But upon facing the sober realities of the following day, when many of the erstwhile rampant revellers tottered

forth, again to rally 'round the mahogany strip, this time for the purpose of begging Emil or "Mac" or Joe to compound something unpleasant enough to render the thought of ordinary food less abhorrent—what a shock to discover that there was still a war on!

Something akin, perhaps, to the shock experienced by many when they believed for the time being that it was off! Of course, despite repeated warnings that we must not be too optimistic, but must continue to "carry on" and prepare for the future exactly as though Peace Day were years away, there could have been none so blind to the signs which point to an ending within a matter of a few weeks, that they had failed utterly to speculate as to the effect of peace upon the dye industry, yet to be unexpectedly made aware that the long-heralded Reconstruction Period was at last upon us with the suddenness which characterized its supposed entrance last Thursday, was distinctly staggering.

The dye industry was treated to a peculiar thrill all its own when the celebration began. Yet, for all we know, peace may be an actuality and the thrill permanently renewed even before this journal finds its way into the hands of its readers.

In case this does not happen, however, and peace is delayed for several weeks longer, many in the industry have been privileged to receive a valuable lesson which may be turned to account in the brief time which yet remains to them. For a few brief hours they were enabled to experience --we do not say *enjoy*-- the dance without being obliged to pay the piper--yet. For a while they were able to look upon life and to think exactly the same thoughts as will be their portion at the beginning of the great commercial conflict.

Gentlemen, how did you feel?

Without in the least desiring to become sarcastic, we trust that there were a great many good resolutions made, and that the one written at the top of the list—it should be in red ink

—heralded the determination to cast aside, once and for all, whatever remains of petty jealousy and the opportunistic idea of betrayal of the best interests of the industry as a whole for the securing of fleeting personal gains.

The idea of "beating the other fellow to it," where such an action tends in any way to lower standards or cause future dissatisfaction among our foreign customers, has got to go, or the dye industry in this country will suffer grievously. The war has taught us much concerning the value of co-operation as a factor in the success of national affairs—and the dye industry is a national affair. We must have it; for any number of excellent reasons it is a necessity, and this must not be forgotten for a moment when plans for its future conduct are being laid down.

The idea of co-operation, or nationalization, does not, perhaps, come as readily to the mind of the American business man, taught from earliest childhood to be independent and self-reliant in all things, as it might to that of the Teutonic, whose whole course of training is laid out along such lines. But, as before stated, we may rely upon the lesson of the war to work wonders in this respect, and with this precious principle once firmly fixed and practiced among the dye fraternity there will be no reason to fear the coming of peace. In this connection we cannot do better than to quote the words of William J. Matheson, president of the National Aniline & Chemical Company, in an address delivered at a recent manufacturing conference of the concern held at Buffalo.

Speaking of the future of the color business Mr. Matheson emphasized the immediate necessity of nationalizing the color industry in the United States in the same manner as it has been in other civilized countries.

"Germany," he declared, "nationalized the color industry there long before the war; France has now na-

tionalized it; Japan has nationalized it; Great Britain has nationalized it; and it is absolutely essential that the United States should do so.

"We must divorce our minds from the situation that prevailed before the war. The very fact that Germany united all works under one system for their own protection leaves this country no alternative. France has met this situation; Great Britain has met it; Japan has met it, and this country must meet it."

Mr. Matheson also said that there was no doubt but that Germany had sold some goods below the cost of manufacture, when a discontinuance of manufacture would tend to disorganize the whole plant of Germany, or where it would operate to put American companies out of business. The German manufacturers operated together and distributed the loss over all. They stated quite frankly that they did not think it advisable to allow this industry to become profitable in the United States. The price was never predicated on what the product cost, but on how much it would bear. He likewise emphasized the fact that years before the war, when six big companies were operating in two groups, the German dye manufacturers were "competing under control."

Co-operation, then, is the most important of all the principles to put into practice right now to a greater degree than ever; with that at the head of our list of resolutions, the others will follow as a matter of course, and that is the reason it has been dwelt upon wholly to the exclusion of other problems in this, the first of a series of three articles to

appear in this journal dealing with the dye industry in peace.

We had, last Thursday, a foretaste of the future. Now is the time to remember how the realization felt and to act upon it by making plans based upon the fact that the preservation of the dye industry is not a personal but a national duty devolving upon those who are responsible for its successful conduct.

The Passaic Bleachers' and Dyers' Association, Inc., has been incorporated at Passaic, N. J., to manufacture cotton and other kinds of goods and to dye and bleach the same. The capital of the new organization is \$150,000.

According to a recently issued order from the British Army Council, the permission of the Director of Raw Materials is now necessary in order to purchase or sell solid quebracho extract in that country.

INFLUENCING THE ABSORPTION OF COLORS BY WOOL AND COTTON

In dyeing mixed fabrics of cotton and wool it is serviceable in many instances to have a knowledge of means for regulating and controlling as closely as possible the speed of absorption of coloring matter by these fibers. Of course, a large number of methods of treatment are already known which are useful in encouraging or restraining the absorption power of wool. For instance, the affinity of wool for coloring matters may be increased by treating it with a solution of hypochlorite and dilute acid. At the same time, with this particular treatment wool gains notably in luster, but loses the property of felting mechanically. Nevertheless, the method is used for producing two-color effects on all-wool fabrics by treating the wool in the yarn state before weaving. Non-treated wool and chlorinated wool are woven together in a predetermined style. The chlorinated wool has a yellowish coloration and a greatly increased affinity for coloring matters. In dyeing such a mixed fabric the temperature of the liquor must be kept lower than ordinarily, and without the customary addition of acid. A method which was proposed many years ago for increasing the affinity of wool for coloring matters consists in treating the fiber with strong solutions of alkalis. Wool is very easily acted upon by alkalis, but their action varies greatly according to the temperature and strength of the solution. Very strong caustic soda at 71-106 deg. Tw., at the ordinary temperature, strengthens the wool during the first five or ten minutes; beyond this time the tensile strength diminishes. The increased affinity so acquired by the wool for coloring matters has been made use of for the production of two depths of the same color in the printing of woollen fabrics. It has also been observed that the affinity of the animal fibers may be increased by treatment with a solution of a sulphocyanide. The material is

boiled for an hour in a 5 per cent solution of sulphocyanide of potash; it is possible to vary the degree of affinity by varying the concentration of the solution, but the affinity, once imparted, is stated to be durable. This method finds most application in chrome, mordant and acid dyeings. In place of the sulphocyanides an easily decomposable ammonium salt may be employed—for example, the carbonate, acetate or formate. In application the wool may be treated in a hot 2 to 3 per cent solution of neutral carbonate and ammonia, raising the temperature in the course of half an hour to the boil, and continuing the manipulation at the boil for one hour. The same effect can be produced by boiling wool in a weak solution of bisulphite of soda. In the circumstances, when coloring matters are applied which are not influenced by bisulphite, it may be added directly to the dyeing liquor.

To remove the agent from the wool after dyeing, various means are used: boiling for some time in water or water slightly acidulated with sulphuric acid, or a treatment with formaldehyde or chlorine. Just as methods have been evolved for increasing the affinity of the textile fibers for coloring matters, so others have been devised for restraining it. A notable one of this class is the treatment of wool with concentrated sulphuric acid. This method may be utilized, according to *L'Industrie Textile*, for the production of color effects. The strong acid is applied in very small amounts to the surface of the wool by means of suitable brushes, blocks, or engraved rollers before the dyeing. By another method the wool is treated with an acidified solution of thiosulphate and soda. The wool is treated for one and a half hours in a solution of 50 deg. C., containing 24 per cent thiosulphate of soda and 16 per cent hydrochloric acid. Very varied color effects are obtainable by this method, as it imparts to the wool greatly increased affinity for the basic and vat dyes, and a decreased affinity for the azo, acid, direct and mordant dyes. A further method is known for

the production of multi-color effects on all-wool material. The treatment consists in boiling the material in a liquor containing 10 to 20 per cent tannin and 20 to 25 per cent of formaldehyde, followed by washing and drying. Yarn so treated may be woven along with yarn not treated, and the resulting fabric dyed in an acid liquor (addition of acetic acid or alum). The treated portion becomes colored, whereas the non-treated remains practically non-colored. Turning to cotton, there is, of course, the widely known instance of mercerization producing an increased affinity of the fiber for coloring matters. Other methods are known for augmenting and for retarding the affinity of cotton; for instance, the treatment of cotton with tannin and a salt of tin; in this case the cotton loses its property of absorbing the direct dyes, but at the same time it is, of course, suitably mordant for taking up the basic dyes.

A further process is based on the observation that a large number of dyes capable of resisting the action of hydrogen peroxide can be easily destroyed in the presence of catalytic reagents. The cotton yarn is mordanted in the usual manner with tannin and treated in a solution of acetate of copper, dried and passed through a hot solution of sulphite of soda. The yarn is then associated with ordinary yarn in the weaving, and the fabric produced dyed, say, with a suitable blue. After dyeing the fabric is treated in a warm solution of hydrogen peroxide, with the result that the previously treated portions become decolorized to any desired extent. An interesting proposal for retarding the affinity of cotton for coloring matters is serviceable for obtaining

effects in different colors. Cotton yarn is treated in a strong solution of cerium chloride, dried, and subsequently woven along with ordinary cotton yarn. The fabric is then dyed either with the direct or the sulphur colors. One of these colors is absorbed more strongly and the other much less so by the treated fiber than by the non-treated, and so double effects are obtainable directly. In some circumstances it may be desirable to remove the color imparted to the cotton by the cerium oxide present, and that may be accomplished by treating with a solution of bisulphite of soda acidified with acetic acid.—*Textile Colorist*.

To dye and finish textile fabrics, together with thread and yarns made from silk, cotton, wool and other fibers, the Oxford Dye Works has been incorporated with a capital of \$10,000 under the laws of Pennsylvania. Headquarters of the new concern will be located at Philadelphia.

AMERICAN DYESTUFF REPORTER

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butions appreciated

A. P. HOWES, Editor and Publisher

A LETTER FROM FRANCE

Some weeks ago the *Reporter* published a leading article entitled "Please Page Sherlock Holmes," which had to do with the condition of the French dyestuff industry and in particular spoke of the peculiar policy of sequestration adopted by the French government. One of our subscribers, Walter F. Sykes of Walter F. Sykes & Co., forwarded this article to the St. Denis Society in Paris, for whom Sykes & Co. are agents. We are now in receipt of a letter from Mr. Sykes enclosing a reply from the St. Denis Society which we think should be of great interest to our readers. The letters are as follows:

American Dyestuff Reporter.

Gentlemen:

Some weeks ago we read your article of September 9th, 1918, "Please Page Sherlock Holmes," and sent to our friends in Paris a copy of the same for their attention.

Commenting upon this article, we are to-day in receipt of a letter from the St. Denis Company, which we enclose herewith and which we have thought might be of some interest to you for use in any way that might seem to you proper.

Kindly return this letter to us at your convenience, and oblige,

Yours very truly,

(Signed)

WALTER F. SYKES.

Letterhead of Societe Anonyme des

Matieres Colorantes & Produits Chimiques de St. Denis.

Paris, the 18th of October, 1918.

Messrs. Walter F. Sykes & Co.,
176 William Street,
New York, U. S.

Gentlemen:

In reply to your favor of the 17th ult. and after perusal of the *AMERICAN DYESTUFF REPORTER*, we have pleasure in giving you the desired information.

The author of the article gives a very sound explanation of the slow progress in France of the enlargement of the production of coal tar dyes when he alludes to "the man engaged in a desperate struggle," and it is not to overlook the latter has been entangling us for now more than four years.

It is very kind of the above mentioned gentleman to speak of the French brilliant chemists and to be sure we shall not deny his opinion as to this; we share it entirely, but he is going a bit too far in stating that we have in France *any number* of available chemists trained in the dyestuff industry.

The quality is all right but the quantity is not yet.

As to the numerous firms that are at present engaged in the manufacture of coal tar dyes, you will readily admit that it is not enough for companies to be created to increase at a short notice the supply of goods. It is more quickly done to raise money than to equip a plant, especially nowadays, when about all things to be purchased are kept for the requirements of the War office in ammunition, guns, airships, tanks and the like.

About the German dye works established in Lyons and Creil and which were sequestered by our Government, it is a mistake to state they remained idle. Owing to the great need of the dyes, all of which could not be supplied by the French firms, the Government kept them running to help our textile trade.

We need scarcely make any comment on the policy instituted by our Govern-

ment in the matter of the sequestration of German firms at the beginning of the war. It is exact that our authorities considered the sequestration as a conservative measure; all firms belonging to enemy subjects were sequestered and shut up with the exception of those authorized to work under control of the Government on account of their production being quite necessary for our country's needs.

Why the Lyons and Creil German works were not delivered up to the *Compagnie Nationale de Matieres Colorantes* when asked for, is no doubt a consequence of the above mentioned theory of the sequestration such as understood by the French authorities. The critical time at which it was enforced should not be overlooked. The military situation has altered so materially of late that we think it advisable not to conclude hastily that the French are so good as to be too much so, and wait until the end comes.

Believe us, Gentlemen,

Yours very truly,

CH. VANDEVENTER.

British Dyes, Ltd., is to be congratulated upon its enterprise in publishing a new and exceedingly brilliant chart in colors of the coal-tar dyestuffs and intermediates. This chart, which appears as a supplement to the current issue of the *Dyer and Calico Printer*, is a splendid example of compactness without loss of essential detail, and we have no doubt that those sufficiently interested can obtain a copy by writing to the company at Huddersfield, England.

The fire demon recently visited the plant of the Newton Oil Mills, located at Newton, Miss., with the resultant destruction of one of the company's buildings valued at \$35,000.

At a cost of \$6,000, the Powers-Weightman-Rosengarten Co., Philadelphia, will erect a brick addition to its plant, about 28 x 40 feet, at Ridge Avenue and Calumet Street, that city.

AN ENGLISH VIEW OF RECONSTRUCTION AFTER THE WAR

ABSTRACTS FROM

SIR ALBERT STANLEY'S ADDRESS

In the opinion of those connected with the dyestuff industry in England, a material, though temporary, reduction in the price of raw materials used in the industry may be looked for everywhere following the cessation of hostilities. This slump, it is thought, will occur to a still greater degree in the price of yarn and cloth, to be followed in both cases by an unprecedented rise due to strain on shipping and production. The boom, opinion has it, will in a few years gradually diminish as the world shortage becomes satisfied, until another crisis will be the result.

These opinions are reflected in a recent issue of the *Dyer and Calico Printer*, and are based in part upon an address by Sir Albert Stanley, president of the British Board of Trade. The pertinent portions of this address are abstracted in that journal, and owing to their timeliness and general interest, are reproduced herewith for the benefit of American readers. We quote:

The position with which British industry and trade, and indeed the industry and trade of the whole world, will be faced at the conclusion of the war is one which is without parallel in history. Other wars have lasted much longer, but no one of them has been so intense and far-reaching, has so disorganized the whole commerce of the world, has involved so great a strain upon the industrial powers and economic resources, or has levied so heavy a toll upon the man-power of the nations engaged in it. For more than four years the manufacturing powers of the great industrial nations of the world have been almost entirely absorbed in meeting the demands for munitions of war; and their overseas trade, which is so essential to some of them, and especially to this country, has been vastly reduced. This conversion of industries to war purposes has

involved very heavy losses for our manufacturers and merchants, who in many directions have seen their normal trade entirely cease, whilst in other directions it has been gravely curtailed.

AFTER WAR COMPETITION

In their efforts to bring about the recovery and expansion of British industry and trade, manufacturers and merchants will have to meet the competition in the world market not only of Germany, who will make every effort to recover something of her pre-war position, but also of certain neutral countries which have profited greatly by the war, and will be in a strong position as competitors after the conclusion of peace. If this country is to play its part in making good the world's losses and in meeting its demands for equipment, including railways, ships, plant and machinery of all kinds, in increasing the world's supplies of food and the materials of industry, and in providing the requisite capital for these developments, whilst at the same time bearing and reducing rapidly the burden of debt and taxation resulting from the vast non-economic expenditure of the war, it is obvious that the primary requisite is that the industries of this nation should as quickly as possible be established and maintained at the highest possible level of productive efficiency.

In this matter there is much leeway to be made up. Whilst it is possible to point to some industries, and to in-

dividual concerns in most industries, which had reached a very high pitch of efficiency, it will, I think, be admitted that prior to the war a considerable proportion of British industry fell short of a desirable standard, and that far-reaching changes and improvements are necessary if we are to be in a position to meet effectively the great demands which will be made upon us and the intensified competition of the other industrial nations.

PRODUCTION DURING THE WAR

It is true that during the war the actual output of our industries has been maintained at a high level, though this has been in the main for other than trade purposes. The range of our industrial activity has thus been widened substantially; new manufactures have been introduced, and others carried on previously only to a small extent have been largely increased. I need mention as familiar examples only dyes, drugs and other chemical products, optical glass, and magnetos. Much that has been gained in this way will be retained; but we have to carry the lessons of the last four years much further.

It is in my judgment essential that sweeping improvements in methods of production should be made and that accompanying this there should be an improvement in our methods of marketing and in the general organization of our overseas trade.

NEED FOR LARGE SCALE PRODUCTION

As regards production, the first necessity appears to me to be the development of large scale production. The individualism which has been a leading characteristic of British manufacture in the past has had some great advantages, and I should be the last person to belittle the results which have been achieved by the individual enterprise and resourcefulness of our readers. But one result of this individualism is that British industrial organization differs from that of our great modern competitors in that manufacture in this country is carried on to a very large extent by a host of

small or medium sized works, many of which are engaged in the production of a large variety of articles with only a small output of each kind, and all of which have separate management and marketing staffs. Moreover, the long development of industry here had the result that before the war there was much plant that was relatively inefficient, in the sense that it was not of the most modern type. Its replacement by more up-to-date plant had been retarded by the inability of the small scale manufacturer to furnish the capital or obtain the technical skill requisite for the re-equipment and modernization of his works.

The result of all these conditions has inevitably been considerable internecine competition, much overlapping in production, and a large amount of economic waste. Large scale production, on the other hand, makes possible the elimination of a large part of the economic waste which has hitherto taken place since it facilitates concentration of effort, better organization of labor, wider adoption of standardization (in itself one of the most potent means of reducing waste), provision of more modern and efficient plant, savings in overhead charges and, because of the economics thus realized, better remuneration for its management and labor staffs, with resultant improvement in their quality.

SCIENTIFIC RESEARCH

A further requisite of maximum productivity is greater attention to scientific research in its application to industry. Here, again, I have no wish to belittle what has been done by British manufacturers in the past. But it is, I think, generally admitted

that our manufacturers as a class have not hitherto been so conscious of the importance of scientific research as some of our foreign competitors; and it is also, I think, true that where they have been conscious of the need they have in many cases not been able to do much in the matter owing to the limitation of their resources. A firm or company carrying on production on a small or medium scale is obviously not in a position to expend any considerable amount on research which may not yield immediate commercial results, and may have to be carried on for a long period at considerable cost before any profitable results are obtained. Scientific research of this character can clearly be carried on only by large concerns or by the co-operation of a number of concerns in the manner advocated by the Department of Scientific and Industrial Research, which is now promoting with every promise of success the formation of representative trade research associations.

MAINTENANCE OF KEY INDUSTRIES

It must be ready to take all measures necessary to assure the maintenance of industries essential for the safety of the State, to prevent any such industries from falling under the control of potential enemies, and to guard its manufacturers against unfair competition. And in particular it must be prepared to give especial assistance to-

wards the maintenance and development of key industries. It is not, in my judgment, possible to lay down any simple line which this assistance to key industries should take; the precise form must vary with the conditions of each particular case. One thing, however, is perfectly clear, that we cannot allow ourselves to revert to the state of dependence upon foreign, and potentially enemy, sources of supply, not merely for raw materials, but for other essential requisites of production, which characterized some of our great industries before the war. And where special state assistance, whatever its form, is given to such key industries, there must, in my opinion, be some measure of Government supervision to secure that the objects for which the assistance is given are effectively attained, and that the assisted industries do not take any unfair advantage of the position in which they are placed.

TRANSITIONAL CONTROL BY THE GOVERNMENT

It is in my judgment of great importance that there should be no attempt at Government control of industry and trade after the war, except in so far as such control may be necessary during the transition from a war to a peace basis. Some amount of control for that purpose there must be. It will obviously be impracticable to revert suddenly to a state of complete freedom from individual action, but it

should be for the shortest possible period and should, as far as possible, be limited to definite purposes, such as the securing of food and material supplies, the prevention of a scramble for materials and plant, and the equitable allocation amongst competing industries of materials, plant, and tonnage where these are insufficient to meet all demands. In this connection we cannot think only of ourselves; we must be mindful of the equitable claims of our Allies, and especially of those whose territories have been devastated and whose industrial equipment has been deliberately destroyed by invaders. The moral obligation to aid those countries is one which I am confident we all gladly recognize, and we welcome the prospect which the military events of the last few days hold out of commencing to discharge something of that obligation in the near future.

If in the manner I have thus endeavored to sketch we can secure the whole-hearted co-operation of employers and employed, with the encouragement and support of the Government, and so assure the maximum of efficiency and the largest possible production combined with economy of effort and the best utilization of our financial and material resources, the establishment of closer ties of common interest with our Empire overseas, and the development of our trade relations with the friendly nations, I for one have no fear as to the speedy recovery of our industrial and commercial position and the economic well-being of our country.

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 470 Fourth Avenue, New York City.

W. C. CO.—*Question*—In the course of handling Malachite Green during its manufacture, it attaches to the hand and is practically impossible to remove. We have, up to the present, been using sodium bisulphite and a solution of potassium permanganate, first applying the permanganate and then the bisulphite. Although applications of these chemicals remove the Malachite Green somewhat, it returns after the passing of about one hour. Our desire is to locate something which will effect a permanent removal.

Answer—The stains can be permanently removed by the application of a solution of sodium hypochlorite. This is prepared in the proper strength for this purpose by Charles Cooper & Co., 194 Worth Street, New York. Follow this application by the sodium

bisulphite, which will remove the disagreeable odor left by the hypochlorite.

A. E. C.—The two samples of dye-stuffs were received in a damp condition due to the absorption of moisture in transit. We would recommend that in the future you forward them in glass stoppered bottles. The moisture content after four hours at 150 deg. C. was as follows:

| | |
|----------|----------------|
| "A"..... | 7.85 per cent. |
| "B"..... | 9.26 per cent. |
| "C"..... | 9.62 per cent. |

V. T.—Full details for the detection of the seven permitted food colors were forwarded you by mail; we strongly advise that you follow the scheme of analysis as outlined.

The sample of aniline green will be tested for arsenic and the result communicated to you at the earliest possible moment.

N. L. T.—We have your letter of recent date and as soon as the dye arrives it will be analyzed, identified, and the working formula for its reproduction forwarded you. If you desire data as to machinery, kindly quote the

size batch you intend making, so that the unit required may be decided upon.

DOMESTIC FULLER'S EARTH

It has been announced by Pomeroy & Fischer, Inc., New York, that this concern has become the agent in this country for the powdered grades of "Floridin" bleaching earth from the mines of that name at Quincy and Jamieson, Fla.

At the present time about equal quantities of domestic and of English earth are consumed in this country. On this point the U. S. Bureau of Mines (Bulletin 71) says: "As a result of the investigations made, the Bureau of Mines believes that the United States has Fuller's earth far better suited for refining edible oils than any imported."

Floridin (XXF quality) weighs 30 pounds per cubic foot and runs 100 mesh or finer. It is said to be as uniform in quality as any earth can be, and has been successfully used for many years by a goodly number of America's largest refiners of vegetable and animal oils.

In view of the fact that the export of all other filtering materials has been embargoed by the English Government,

it is not unlikely that Fuller's earth may be added to the list in the near future, and the concern referred to invites investigation and factory tests of the Floridin product with a view to securing an added source of supply in these uncertain times.

NOTES OF THE TRADE

To manufacture, import, export and generally deal in chemicals, colors, dyestuffs, together with the machinery and equipment by which these products are manufactured, the New England Chemical Company has been incorporated under the laws of Massachusetts. The headquarters of the new concern will be located at Boston. The capital announced is \$50,000.

The Lindley Suffern Chemical Company has been incorporated with a capital of \$30,000 under the laws of Delaware to operate a plant for the manufacture of chemicals. The incorporators are S. B. Howard, A. W. Bellows and Paul S. Smith, New York City, where the headquarters of the new firm will be located.

With a capital of \$3,000,000, the R. G. Simpson Chemical Company has been incorporated to operate a plant for the manufacture of chemicals, dyestuffs and allied specialties. The company's headquarters are at Louisa, Ky.

The Metro Color & Chemical Works, of New York, has filed a notice signifying its intention to operate at Garfield, N. J. Joseph J. Darwin, Midland Avenue, that city, will act as local representative for the corporation.

Announcement has been made by

Bachmeier & Co., dyestuffs and chemicals, New York City, of the removal of the company's Philadelphia office to 302 Weightman Building, 1524 Chestnut Street, that city. F. J. Dewchock is resident manager.

At a cost of \$6,000,000 the Solvay Process Company, Syracuse, N. Y., will erect a new picric acid plant to be located near Grand Rapids, Mich. Arrangements for the construction of the plant were recently completed.

It is expected that the three largest dyestuff manufacturing companies in Switzerland are considering the advisability of entering into a close working agreement under which the processes, patents and profits will be pooled, but the management of the three concerns will continue as heretofore. The companies involved are the Society of Chemical Industry, the Sandoy Chemical Works and the Geigy Company.

The Central Chemical Company, Hagerstown, Md., has increased its capital from \$200,000 to \$600,000.

The plant of the United Piece Dye Works, located at Nyack, N. Y., and recently acquired by American Aniline Products, Inc., in now engaged in turning out khaki and navy blue dyes for the Government.

The Private Label Chemical Co. has been incorporated under the laws of Illinois to manufacture dyes and chemicals. The capital is \$35,000 and the headquarters of the concern are in Chicago.

With a capital of \$200,000, the Globe Chemical Co. has been incorporated at Boston, Mass., to manufacture, import and export chemicals.



AMERICAN DYESTUFF REPORTER

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German Competition

Fulling Formulas for the Finisher

By W. H. Butler

New Mineral Dyestuffs

AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

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No. 21

FROM MARS TO MARKETS

The Struggle Is On; Hans the Salesman Is Packing
His Sample Case—The Danger of Pity for the Boche

THE gong sounds. There is a thunder of hoofs and a hoarse clamor from the spectators as the magnificent animals leap forward under the wire. They're off! Scarce a second, and all are flying like the wind. Down the stretch they tear, the dust spurting and jockeys bent double, their silken blouses flapping like pennants in a gale. Faster and faster. Close work, this! Ah, suddenly, within the twinkling of an eye, an uppercut, followed by a hard left straight to the jaw, has driven one of the contestants back against the ropes. Quick to see the opportunity, his opponent bores in, his arms working like pistons, raining blows upon the other's face. A vicious jab, and he has dropped him to one knee. The referee's hand is raised. The crowd leans forward expectantly. Both men knit their brows and study the chess-board. Two—possibly three—more moves may result in a checkmate. Stealthily one lifts his heavy beer-glass to bring it down upon the other's head. But with a terrific smash which shoots his ball like a white meteor to a point just inside the line at the back of the tennis-court, he has

turned the tables completely. Three more yards to gain, and the whistle may blow any second! Panting, both elevens line up again. Crack! The ball is soaring far over centerfield and the men start to circle the bases as, snapping and snarling, they roll over and over, worrying at each others' throats. The black dog, his muzzle stained crimson, breath coming in painful sobs, signals to his crew and the stroke is increased to forty-four. Faster and faster the men in the shell sway back and forth, wet oars flashing in the sunlight and shoulders gleaming with perspiration. One supreme effort . . . but the drive has been badly sliced and it will take at least three strokes to get out of the sand hazard. Sails bellying, and all reefs shaken out long since, the careening yachts round into the wind and point for the stake. As they approach the turn at a hundred-mile clip the red car, now missing badly, is seen to draw ahead. Will it hold out? At last! The artillery reopens fire, the reserves come up, the charge is sounded, the lightning flashes, Jupiter is turning cartwheels on top of Mount Olympus, and—

We are not much of a hand at describing a contest. And if things may have gotten mixed up a bit in the foregoing, it is nothing more than a hazy impression born of speculation about the next year or two in the history of the American dye industry. Now that the great war has ended, the commercial battle has begun. With the writing of "Finis" to the most titanic struggle the world has ever seen, one has only to turn the page in order to find "Prologue" at the beginning of a new series by the same author. Mr. Alexander X. Mars is a prolific writer and never stops turning out stories, only in peacetimes he is apt to do his work under the *nom de plume* of "Markets" instead of signing his real name. Having once learned this by bitter experience, it is important now to remember it. However, we do not believe that the dye industry will need much coaching in this respect.

Viewed from all angles, the situation is most promising and permits of optimistic augury. The Allies have achieved their respective aims with a completeness and finality which brooks of no doubt whatsoever as to the future. The principles of Prussianism have received their death-blow, and while there are those who will now howl for the Kaiser's head to be delivered on a silver charger, it will matter little to us in the days to come whether that gentleman is in good, in Dutch or indifferent. For his particular brand of cussedness is not likely ever again to find a fresh outlet for its talents. There will be no Napoleonic "Hundred Days" after this war; no "return from Elba" to mar the reconstruction period.

In its present chaotic mental state no one can predict what may happen in Germany. But we rather incline to the belief that reason, aided by the ministrations of the Allies, will rule in that country to a degree somewhat surprising to those who have been looking forward to a bloody revolution. It will take some time before Teutonic commercial life can resume

anything like its stride, but one may be sure that there will be no time wasted. And, the difficulty of our task will be inversely as the length of this time.

Nevertheless, the struggle predicted and preached incessantly ever since 1914 is surely approaching. Hans the Salesman is packing his sample case, and Carl the Chemist can now turn his attention from the quantity production of poison gas to Prussian blue. The former will be here again some day, how soon nobody knows, with his face washed and his hand out for orders. He may be one of the very men who assisted in severing other hands—children's hands, mainly—from their owners. But he will touch lightly upon that subject, if at all. "Military necessity" and business do not mix. He will prefer to discuss discounts, and the needy condition of German manufacturers.

Germany needs the money and, crippled though she may be, will make an effort to re-establish some of her business here, which cannot but make itself distinctly felt once it really gets going. There will be a tussle, sure enough, between the American dye manufacturer and the German. The campaign will be subtly waged on the part of the latter, and for this reason more dangerous than might at first appear. The greatest danger to the permanency of the dye industry in this country, next to lack of co-operation, is the danger of pity for the Boche.

Wars may come and wars may go, but apparently our old friend German propaganda has as many lives as the proverbial feline. Indications are that it will be just as vital a subject to American business after the war as it ever was. The first intimation of this arrived the day after the signing of the armistice, when Dr. Solf sent forth an appeal in behalf of Germany's starving population. This appeal was doubtless based upon the truth, and it is the intention of the Government to take action looking to the relief of conditions in that coun-

try and others; but nevertheless, to put it somewhat crudely, the "sympathy gag" will play an important part in the propaganda with which the general commercial campaign will be launched.

We must be prepared to meet it in the same way that the other was met. This time we have the advantage of being forewarned and of knowing something of the probable methods to be employed. It will be easier to identify propaganda of this sort, now that we have seen it in action. For the rest, the patriotism of the dye consumers of this country is unquestioned, and we do not think that they will be easily led astray by such business tactics as Germany has seen fit to employ in the past.

There is nothing to fear. The dye industry in this country is by this time well enough established to meet all comers, and even to compete successfully in foreign markets. Under the caption "Our Beautiful New Habits—Will They Last?" *Life* recently considered the chances of survival enjoyed by the newly-acquired and national virtues of thrift, obedience and general co-operation. It drew the conclusion that, come what may, we shall never be quite the same again. This is to be fervently hoped for. Due to the horrors of the past four years we have achieved a certain attitude of mind toward the perpetrators of the Belgian and Armenian atrocities. It will be well to preserve this, at least until we can see better into the future and know that our American industries are on the steady increase. If there is to be a "bloody shirt," why not wave it where it will do the most good?

Let the dye consumer, then, not be tempted to forget in a hurry what once nearly happened to him as a result of not having a self-contained dye industry within easy reach. Let him remember that by supporting his domestic industry he strengthens his own future supply and renders a service to the country at large. He has not had very much to complain of during the past few months, and today he is potentially in a better position than he ever was. The colors are here, and soon there will be such an abundance that it should be easy for him to banish all other sources of supply from his thoughts.

The transition from thoughts of Mars to thoughts of markets is normal and inevitable. Our chief business *was* to win the war; it is now to warn the winners not to slacken their efforts for a minute. With the ability to pull together, we are ready for the Hun!

FULLING FORMULAS FOR THE FINISHER

By W. H. BUTLER

The buying of soap is very often a matter of guesswork, and yet it is surprising how much uniformity there is in fat percentage when soaps from various makers, but of same general character, are compared. Soap making, in brief, is the saponification of a fatty matter by means of the hydrates of sodium and potassium. The soda soap is a hard soap and the potash soap is a soft soap. On account of the very high price of all salts of potash, soft soap, a general favorite in English wool scouring, has been replaced by soda soap.

A straight fatty body like palm oil or olive oil may be viewed as a union of a fatty acid and glycerol, and technically known as a glyceride. When this glyceride or oil is treated with caustic soda, palmate or oleate of soda or soap is formed, and glycerine is liberated. Palm oil saponifies quite easily, containing as it does a large though varying percentage of free fatty acids, and the soap so familiar in the fulling room is in large part a palmate of soda. Roughly speaking, the palm oil soap of commerce contains 65 per cent of available soap.

A quick and ready method of testing a soap is to dry in a porcelain crucible a small weighted quantity at water boil for several hours until the weight is constant. The loss indicates the water. Incinerate the remainder, and the loss indicates the fatty matter. What is left is the alkali used, some common salt left there by the salting-out process, and in other cases silicate of soda added to give additional hardness to the soap.

As some mills make their own soap from red oil, it should be remembered that red oil, not being a true oil, but only the fatty acid of an oil, there is no glycerine liberated in the operation. There being no true oil to be decomposed into its fatty acid and glycerine constituents, the operation is a very rapid one, consisting merely in the neutralization of the oleic and stearic acids of red oil by means of caustic soda or potash, or the carbonates of these alkalies. This is preferably conducted at boil.

THE TEST FOR FREE ALKALI

A comparative test for free alkali in a soap, that is, alkali in excess of that actually required to convert the oil into soap, may be readily made by letting a drop of phenolphthalein fall on freshly cut soap. If free alkali is present the colorless phenol immediately becomes a fine magenta shade.

The use of any particular soap, like the selection of any particular oil, is a matter of individual practice. Whether soap is bought or made before it is available for the fulling of goods in the grease, it has to be made strongly alkaline. The following formulas are in actual use in several mills. A consideration of them will enable any finisher to check up his own formulas and see whether he has it sufficiently alkaline or too alkaline. The carbonate of potash has now been displaced, presumably, by crystal carbonate or some high grade soda ash. In each case the formula is made up to 600 gallons, so that one gallon of solution contains one-half pound of soap.

Palm Oil Soap—300 pounds palm oil soap; 300 pounds carbonate of potash; 400 pounds alkali.

Palm Oil Soap—300 pounds soap; 100 pounds caustic soda; 200 pounds alkali.

Olive Oil Soap—300 pounds soap; 300 pounds carbonate potash; 300 pounds alkali.

Olive Oil Potash Soap—300 pounds

soap; 300 pounds ammoniated potash; 300 pounds alkali.

Red Oil Soap—30 gallons red oil; 300 pounds carbonate potash; 400 pounds alkali.

The general favorite among soaps for fulling and scouring appears to be the palm oil type. But there seems to be no scientific reason for selecting a palm oil soap as though it possessed some magical property not possessed by other soaps. More important indeed than the character of the oil base is the degree of alkalinity of the soap mixture going into the fulling mill. And the amount of alkali in the long run ought to depend on the character of the wool oil used on the goods.

Take three typical wool oils, one having a degreas base, another a lard oil base, and the third a red oil base. A soap solution that gave good fulling results with the degreas base oil would not be alkaline enough were red oil in the goods, for the reason given above, that red oil is chiefly fatty acid. Lard oils used for such purposes as wool oil compounding contain from 12 to 25 per cent of free fatty acids, degreas from 15 to 18 per cent, and red oil from 85 to 98 per cent.

And further it may be remarked that where a quantity of mineral oil is known to be in the goods, it is not advisable to increase the alkalinity of the soap. A soap solution is made strongly alkaline so that the real fatty matter on the stock may be saponified, that is, made into soap. But mineral oil cannot be made into soap; it has been used simply as a lubricant for the fibre. The mineral oil is removed by being emulsified by the soap solution itself and by its own fat becoming soap, and so excess or deficiency of alkali has nothing to do directly with this operation.

The fulling of goods does not begin until the wool oil they bring into the mill becomes loosened and in a fair way of removal. This wool oil was put on them so that the wool fibres could pass through the operations of carding and spinning with a minimum of interlocking of fibres. Now in the

fulling operation a maximum of interlocking of fibres is demanded, so the lubricant must be removed.

In mills where heavy Government goods are being fulled it has been found that sulphonated castor oil, commonly known as alizarine assistant or turkey red oil, possessing as it does great penetrative power, added to the soap going into the fulling mill sets the operation going sooner, cutting off from one to two hours in the time required.

Ten pounds of 60 per cent sulphonated oil was added to a four-piece mill, and the fulling was completed in two hours less than usual. These pieces were 74 inches wide, and were fulled down to 56 inches. After twenty minutes' washing in warm water they were scoured fifteen minutes, and then run forty-five minutes in clear water. Fifteen pailfuls of soap were used, equivalent to about 5 per cent of soap and 3 per cent of alkali. A degreas base oil had been used.—*Textile World Journal*.

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A. P. HOWES, Publisher
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EXPORT TRADE

In our issue of November 4 we published an interview with Kiichi Mizutani, managing director of the Yamato Shokai, Ltd., of Osaka, Japan. This interview has occasioned a great deal of comment, numerous dealers and manufacturers having taken occasion to write or telephone us in regard to Mr. Mizutani's opinions as expressed therein and to comment generally on the outlook for export business.

There is no question but that the future development of the American dyestuff industry will depend, in large measure, upon the extent to which we are able to increase our export business. The German dyestuff industry was not supported by German patronage alone, but by the patronage of practically the whole world. If the American manufacturers were to confine themselves to supplying the needs of America alone they could never hope to attain the quantity or quality of production which will be possible if they devote their energies to developing export relations.

It is the opinion of the REPORTER that every American manufacturer of dyestuffs should give very serious consideration to the extension and development of suitable export connections. As we have repeatedly pointed out in these columns, the whole world will be glad to purchase from American dyestuff manufacturers if they will conduct their foreign business on a basis of business practices which would measure up to the same standard as those required by

domestic consumers. We now have the business of America well in hand and we are certain that it can be maintained against foreign competition, but to extend and develop our industry to its full possibilities every manufacturer must give serious thought to the extension of his relations to the entire dye-consuming clientele of the world.

MORE NEWS FROM FRANCE

In last week's issue we reprinted a copy of a letter from the Societe Anonyme des Matieres Colorantes & Produits Chimiques de St. Denis, in which this firm commented on a recent article run in the REPORTER entitled "Please Page Sherlock Holmes," which had to do with the treatment accorded the German dyestuff plants in France.

We are now in receipt of a letter from Walter F. Sykes, of Walter F. Sykes & Co., who was kind enough to bring our article to the notice of the St. Denis Society, in which Mr. Sykes calls attention to the tremendous percentage of chemists formerly engaged in work for the St. Denis Society who have been killed or maimed by the war. The letter is as follows:

New York, Nov. 13, 1918.

AMERICAN DYESTUFF REPORTER,

Gentlemen: I have with much pleasure read your small article in your issue of November 11 with which you incorporate the comments made by the St. Denis Dyestuff & Chemical Company, of Paris, upon your article of some weeks ago entitled "Please Page Sherlock Holmes."

May I supplement the statement made by them with another, a statement which I think the gentleman who signed the letter was, perhaps, too proud to make for himself, viz.: that out of a known staff of fifty-one chemists, up to June 1, 1918, twenty-eight had been killed, thirteen had suffered the loss of an arm or a leg, or both, leaving ten unaccounted for at that time. This little statement may perhaps account for the scarcity

of chemists referred to by the gentleman in question.

The facts speak for themselves.

Yours very truly,

WALTER F. SYKES.

It seems to us that the facts contained in the above letter are truly wonderful. They speak more than any glowing eulogy could possibly do of the heroism and devotion of the French people. It is no wonder, when circumstances such as this exist, that the French color manufacturers have been unable to produce a surplus of goods for export. The marvelous part of it is that they have been able to keep their factories running at all or to produce dyestuffs sufficient, or nearly so, to color the uniforms for the army.

NEW MINERAL DYESTUFFS

M. Malcolmson and F. W. V. Fitzgerald have taken out a patent (117,095) for the manufacture of new dyestuffs and for new processes. Certain salts of metals are capable of reacting with other salts of minerals or metals to fix various shades on wool. When certain of these colors do not dye cotton the addition of sulphur enables various shades of color to be produced and fixed on the vegetable fiber.

The inventor, naturally, does not assert that he has discovered that mineral and metallic substances are of use in the production or fixing of colors, but claims to have invented a method of treating certain substances of mineral or metallic origin in a novel manner, whereby the use of these substances for dyeing may be greatly extended and more economical.

To obtain light, medium, and deep shades of brown to black on woolen yarn or fabric, at temperatures varying from 60 deg. to 180 deg. Fahr., a lead compound, such as lead oxide, carbonate, nitrate, acetate or sulphate of lead, is used in the proportion of from 2 per cent upwards of the weight of material to be dyed. After stirring this into the dye beck, a small proportion of caustic soda is added, from 1 per cent upwards,

calculated upon the weight of the goods to be dyed.

When the caustic soda has dissolved the yarn or fabric is entered. If oxide or carbonate of lead has been used, the color will gradually develop after a few hours in the cold. By heating the dye beck to a temperature from 100 deg. to 180 deg. Fahr. (care being taken not to tender the goods by too high a temperature) the color can be developed in from twenty to thirty minutes.

If too deep a color is obtained, this may be rectified by passing the goods through a dilute sulphuric acid bath or by the addition of sulphuric acid to the dye beck. Nitric acid may be used in the place of sulphuric acid if a brighter yellowish color is desired. The addition of salt to the dye beck retards the development of the color.

Calcium hydrate may be used in the place of the hydrate of soda if desired. Since, however, this is converted into carbonate in the process of dyeing, caustic soda is preferred because the carbonate is soluble, whereas calcium carbonate is insoluble, and further, the insoluble carbonate becomes entangled or embedded in the fiber. However, the formation of an insoluble carbonate, when calcium hydrate is added direct to the dye beck, can be prevented by the use of a small quantity of sal-ammoniac. This effects the formation of ammonium carbonate, which is volatile, and of soluble calcium chloride in the place of the insoluble carbonate.

The insoluble lead compounds can be mechanically mixed with sodium carbonate and calcium oxide, in various proportions, this mixture yielding a dyestuff capable of giving a good direct brown to woolen when used alone. Three parts of an insoluble lead compound, such as litharge, mixed with four parts of calcium oxide and six parts of sodium carbonate (the whole being thoroughly ground down and mixed together) makes a good mixture. From 1 per cent upwards of this mixture, calculated upon the quantity of wool to be dyed, may be used to give a brown to woolen.

Good results have been obtained by adding various quantities of this mixture to the bath, at from 100 deg. to 120 deg. Fahr., entering the goods to be dyed at 180 deg. to 212 deg. Fahr., dyeing taking from thirty minutes upwards, according to shade.

In manufacturing a dyestuff from these lead compounds, a saturated solution of a soluble lead salt is combined with a soluble salt of iron or copper which contains water of crystallization by first rendering the iron or copper salt anhydrous, and then replacing the water of crystallization by the saturated lead solution. Soluble vegetable or organic coloring matters may be added to this lead soluble and dissolved in it prior to its being combined with the anhydrous iron or copper salt. The quantity of iron or copper salt to be used will, of course, be calculated from the known quantity of water of crystallization originally contained in a given quantity of the iron or copper salt. The water of crystallization must be equal to, or greater than, the water contained in the lead solution.

The combination of the lead solution with a copper salt yields a dyestuff capable of impairing a good direct khaki to woolen, when used in conjunction with an alkaline mordant. The combination of an iron salt with the lead solution yields a brown.

When using the combination of a solution of a soluble lead salt with the anhydrous copper sulphate or salt previously described, a mordant is used, composed of a ground down mixture

of sodium carbonate and calcium oxide. Six parts of sodium carbonate and four parts of calcium make a good mixture, but other proportions may be used. Dyestuff and mordant may be used in equal proportions, the combined quantities being regulated according to the depth of shade required.

In dyeing with these substances the required quantity of dyestuff is entered into the dye bath at from 90 deg. to 120 deg. Fahr. When the dyestuff has dissolved the goods are entered and the temperature of the dye liquor raised to 212 deg. Fahr. While the dye liquor is coming to the boil the required quantity of mordant is put in with an enameled iron vessel with from twelve times upwards by bulk of cold water, and the liquid is brought to the boil. After the sediment has settled, and when the dye bath has been raised to 212 deg. Fahr., the goods are lifted and the clear mordant liquor is put into the dye water. If necessary, a strainer is used to prevent any of the sediment passing into the dye bath.

It will be obvious that an extensive variety of shades may be produced by mixing the various substances or by successively dyeing the same fabric with

two or more of the colors. The production of certain of these shades, however, necessitates the use of an acidified solution of the metallic salt.

For tissue printing various resists or alterants may be topically applied prior to the dyeing of the fabric in order to produce various effects.

As an instance of the use of sulphur when the color goes on wool but not upon cotton, sulphur is added to the extent of from one-quarter to one-half of the weight of the lead compound used before mixing in the caustic calcium or sodium hydrate. After entering the cotton goods, the dye bath is brought to 212 deg. Fahr., at which temperature the color rapidly takes upon the cotton.

The inventor is of the opinion that, with certain exceptions, these colors result from the formation of wholly or moderately insoluble metallic sulphides within or upon the yarn or fabric to be dyed. In this connection it may be stated that the inventor has found that the use of a metallic sulphate, or the ad-

dition of sulphur to the dyestuffs, tends to intensify or deepen the shades produced upon the wool.

It is not only the alkaline reactions or the formations of alkaline or neutral sulphurets that produce certain shades, but certain metals—copper, for instance—have their sulphides precipitated by the evolution within, or the passing of sulphuretted hydrogen through an acidified solution of their salts. Fibers which do not contain sulphur in themselves should be treated in the manner indicated for cotton.

In connection with the use of the dyestuffs herein described, the inventor has electrolyzed the water in the dye bath to precipitate or produce the colors within or upon the yarn or fabric to be dyed instead of raising the temperature.—*Textile Colorist*.

"CHILE SALTPETER" ONLY FOREIGN MATERIAL NOW NEEDED BY DYE IN- DUSTRY

That the American dye industry is now independent of all foreign sources of production, with the single exception of "Chile saltpeter," was the gist of a short review of the present situation embodied in the address delivered by Dr. Grinnell Jones before the recent annual meeting of the American Chemical Society at Cleveland. In his capacity of consultant to the U. S. Tariff Commission, and as one of the compilers of the Coal-Tar Census, Dr. Jones' paper on this occasion dealt with the effects of the war on our chemical industries generally, with particular reference to the logical disposal of the greatly augmented productions in various lines when peace comes. That por-

tion of the address in which the dye industry is considered follows herewith:

"New conditions in the chemical industries have also been created by the curtailment of imports. As a direct consequence of this stoppage of imports from Germany a new American dye industry has been established. It is true that some dyes were being made in the United States before the war, but the makers relied on Germany for the necessary intermediates, with the exception of a small amount of aniline made here by a single producer. During 1917, 134 different intermediates were made by 118 firms. One firm made 53 different intermediates. Dyes were made by 81 firms. The total production of dyes in the United States during 1917 was approximately equal in gross weight to the annual importations before the war. The exports of American dyes exceeded in value, although not in quantity or variety, our imports before the war. The dye industry is not dependent on any imported raw material except sodium nitrate from Chile. Many important dyes are still lacking, but indigo and alizarine are now on the market in significant amounts and the vat dyes for cotton derived from anthracene are coming."

Dr. H. H. Hodgson, M.A., B.Sc., has been appointed head of the Department of Coal-Tar Color Manufacture in the Huddersfield Technical College.

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 470 Fourth Avenue, New York City.

B. B. G.—Henry A. Gardner patented the process you mention for separating picric acid from wash waters. Sodium bisulphate is dissolved in the wash water until a high gravity solution is obtained. The picric acid then forms a flocculent supernatant layer, from which it is easily removed.

Full details of this patent will be sent you, if so desired.

J. S. C.—The dye marked "Brown L. Y. Conc." is a sulphur color with fastness to washing on cotton goods.

The one marked Ammaco Alizarine yellow is a fast wool chrome dye.

P. A. S.—The dry powdered mixture for dyeing cotton goods is composed of logwood extract, hydrated

copper oxide and an alkaline salt. This dye is best used as described in the letter sent you to-day, which also contains full description of the machinery required.

B. M. S.—The dyestuff submitted has been identified as 2,3 hydroxy-naphthoyl - 2 - amino-5-naphthol-7-sulphonic acid. It has a strong affinity for both animal and vegetable fibres, and yields brilliant yellow effects in alkaline solution.

Silk absorbs it from acetic acid solution, and cotton from alkaline solution.

These cotton and silk tests are being forwarded to you by mail as requested.

W. B. T.—You will find full details for the "Bleaching and Coloring of Vegetable Tanned Leather" in *The Leather Manufacturer*, 1917, 28, 126.

Titanium potassium oxalate is used as a whitener and basic aniline dyes, set with a bichromate of potash, as colorings.

K. L.—Under a reflux condenser, heat o-cresol or m-cresol with half its weight of m-phenylene-diamine, in the presence of some sulphur. The result will be the black sulphur dye.

S. B.—Yes, there are dyes produced from Yacca gum and Congo resin. Their nitro and nitroso derivatives are readily converted into sulphur colors by fusion with alkaline sulphides or polysulphides. They are also susceptible to mordants.

ORGANIC CHEMISTRY'S RELATION TO INDUSTRY

In an address before the British Royal Society of Arts, M. O. Forster pointed out the secondary position given, until quite recently, by colleges and universities to the study of organic chemistry, and estimates the output of German chemical talent, operating over a period of years, at between four and five times that of the United Kingdom. The general public, through lack of any education embracing science, did not realize their debt to organic chemistry. The manufacture of dyes, the production of explosives, illuminating and fuel oils, natural and artificial remedies for disease, photographic materials, margarine, soap, rubber, perfumes, artificial silk and celluloid are intimately connected with the principles and practice of organic chemistry. The great weakness of British national method in the past has been neglect to study the sciences underlying the inner qualities of the materials to be manipulated. Not that it is necessary for men engaged in the textile industries to be professional chemists, but the directive heads should have frequent consultation with men trained in science.

Apart from the material fact that organic chemistry when applied to industry has been largely remunerative, it offers one of the most attractive available agencies for cultivating the human intelligence, and appeals strongly to the creative instinct and

imagination. The heads of industrial concerns have, in the past, shown a reluctance to make use of college-trained men, due in part to such a training being incomplete and one-sided. This is inevitably so, owing to the short period of time the average student can devote to studies. The factory differs fundamentally from the university in the respect that the chief aim of the university is to impart, classify, and extend knowledge, while the principal purpose of the factory is to apply knowledge as profitably as possible.

As regards the dye-making industry, Germany owes her supremacy to hard work, indomitable patience, far-sighted employment of profits in fresh experimental work, careful attention to the requirements of customers, scientific encouragement of chemists, and utilization of by-products. For the establishment of the dye-making industry in other countries, the manufacture of the necessary intermediates must be placed on a firm basis, and this demands the outlay of large capital.

BRITAIN'S EFFORT TO COMPETE WITH GERMAN DYES

That the British yet have much to do before they can achieve the equivalent of Germany's dye production is the opinion of Dr. M. O. Forster, Director of British Dyes, Ltd. In an abstract, the *Journal of the Society of Dyers and Colorists* quotes from Dr. Forster's lecture on "The Decay of the Renaissance of British Dye Making," at the British Scientific Products Exhibition, King's College, during the course of which he said that in 1878 the color industry in Germany was four times as valuable as our own. Of £3,150,000 worth of coal-tar colors produced in the world Germany produced £2,000,000, four-fifths of which was exported, while Switzerland produced £350,000, and England only £450,000 worth.

That was 40 years ago; confronted by these figures people would hesitate to believe those who said that in two or three years we should be able to

do all that Germany could in regard to the dye industry. It would take us 10 or 15 years of unremitting labor and extraordinary patience and liberal expenditure on chemistry before we could hope to achieve the position which Germany had reached before the war in this industry.

"They have three times as many chemists as we have, and their population is half as large again," concluded the lecturer. "We shall have to make a great effort if we are going to reach them. The industry is not an El Dorado in which one has to dig once in order to make countless thousands. It can only be achieved if money is spent on experiment. That was how Germany got on, and unless we tread the thorny path the Germans have followed, there is not the slightest hope of our catching them up in this industry. They will keep it for all time."

We wonder whether the returning German envoys who signed the armistice had much difficulty in overtaking their own troops as they traveled Berlinwards!

NOTES OF THE TRADE

Independent Fur Dyers, Inc., has been incorporated under the laws of New York to carry on the business of dyeing furs and skins. The capital is \$5,000 and the head office is in New York City.

With a capital of \$50,000 the Norristown Hosiery Mills has been incorporated at Harrisburg, Pa., to manufacture and deal in yarns, textiles, knit goods, hosiery and garments of all descriptions in wool, silk, cotton, etc.

Plans for the building of a new brick addition to its plant, North Water Street, Poughkeepsie, N. Y., are being considered by the Palatine Aniline & Chemical Company. The estimated cost of the structure is \$40,000.

The U. S. Industrial Chemical Company will erect a new one and two story factory building at its plant at Curtis Bay, Md., to cost \$400,000. The concern is associated with the U. S. Industrial Alcohol Company, New York.

The Mallinckrodt Chemical Works, St. Louis, Mo., is about to begin the construction of an addition to its plant at Second and Mallinckrodt Streets, that city. The cost will be \$6,000.

To operate a plant for the manufacture of chemicals and allied products, the Pure Products Chemical Works has been incorporated under the laws of Pennsylvania. M. deW. Hirst, Philadelphia, is treasurer.

To manufacture chemicals and allied specialties, the Pyrotol Chemical Co. has been incorporated with a capital of \$35,000 at Beaumont, Texas.

Hosiery, threads and yarns will be manufactured by the Whittington Hosiery Mills Co., which was recently incorporated at High Point, N. C., with a capital of \$100,000.

The War Department has authorized the construction of a sulphuric acid plant at Grand Rapids, Mich. The work of erecting and equipping the plant will be done by the construction division of the army, and is expected to cost \$1,500,000. The plant will be situated upon a tract of land which is the property of the Government, and upon which a picric acid plant is now being erected. When in operation, this plant will produce approximately 75,000 tons net per year.



AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, November 25, 1918

No. 22

"THE FUTURE MAY BE REGARDED WITH CONFIDENCE."

These Words, Spoken Last Summer By German Dye Manufacturers, Now Apply More Truly to the American Industry
—The Export Trade as a Factor in Its Permanency

WE have a mania, it seems, for harking back to the ancient days when the world was somewhat newer than it is now and the particular form of "Kultur" of which we have just been furnished an example, was one with the telephone and the "toddle" skirt. It has long been a favorite device of writers, whether exalted or humble, who, lacking a means of leading gracefully up to a given subject, plunge their literary nets deep down into the dead past and, when they draw them up, behold! there is a struggling, squirming Parallel firmly entangled in the meshes to flaunt before the delighted eyes of their readers—who are invited to exclaim, "How true this is!"

It was not that the justly celebrated "good old days" were really so much better than the present, nor yet that past performances could always be relied upon to serve as an accurate guide for the conduct of present generations. It merely suffices to attract attention away from the main issues, whatever they may be; it always sounds well and carries with it a pleasing impression of the writer's erudition (acquired from the

Encyclopedia Britannica) and gives the reader a warm glow of satisfaction as he senses the connection (real or fancied). But it is a good device and we intend to use it again.

In the days of the Delphic Oracle, then, it was the custom, when one wished to lay a small bet on the current Marathon handicap, to send one's card in to the priestess who acted as the medium and, on being admitted, request her to pick the winner. The lady in question then seated herself upon a tripod above a chasm from which issued weird vapors, went into a trance, writhed a bit as she inhaled the noxious fumes, and eventually volunteered a pronouncement which, history intimates, might be taken to mean almost anything; for, although it sounded deeply portentous, it was couched in language so delightfully vague as to require the united efforts of a whole family at least to determine its significance. And even then there were usually two or three possible meanings.

Oh, to be an Oracle!

No matter whether Athens Marble Preferred went up, down or around,

or who won the pennant, the loser could never claim damages or get anything "on" the priestess, for she could always prove a perfect alibi and show that the other result was what the Oracle had meant all along, only the prognostication had fallen on unintelligent ears.

That was really something like! Nothing that we know of would give us greater satisfaction than to be able to sit down and, in a few well-chosen words, reveal the future life of the youthful but husky American dye industry under the peace regime. We realize that because it is our function to come out once a week and perform in these pages for the benefit of a rapt and eager audience, something of the sort is to be expected of us.

The fact of the matter is that, in the case of the dye industry, this cannot be done for a number of reasons which do not apply in other industries. A contemplation of the present situation makes it a practical certainty that any attempt to handle the subject except in sweeping generalities must inevitably result in dismal failure. No minute predictions can be made, because the number of factors upon which the future of our newly-born synthetic color independence depends are legion, and are themselves largely at the mercy of human vagaries.

Hence, as the task is approached, the longing to borrow the Delphic style of phraseology becomes greater and greater.

For one thing, there is the question of the release of much raw material and machinery which were formerly employed for the manufacture of high explosives. The making of munitions of war will, if we follow England's example, cease almost at once, and tons of crudes and intermediates will become available. Whether the prices of these materials will hold up or not is a moot point, but the general consensus of opinion appears to be that they should drop, and rather rapidly. Toluol, acetic acid, chlorine, wood alcohol, caustic soda and am-

monia, all needed in the dye industry, have played a prominent part in the defense of this country, and will now be available in greater quantities than has ever been the case since America began to make her own dyes. The beneficial results will, we believe, make themselves distinctly felt in the next six months, here at home, but more particularly abroad, as the ability to obtain colors in increasing quantities causes manufacturers and dealers to put in a serious bid for their share of the European, Asiatic and South American trade. Just *how* great the effect will be, however, is difficult to estimate, for facts concerning the quantities of these materials which have been employed for munitions, together with statistics as to what proportion of the surplus will be released for the use of the dye manufacturers, are not obtainable at present.

Therefore, although we may appear to hedge, we cannot do better than to say that the really calculable effect will be in the confidence imparted to the industry as a whole. With shipping enough to develop this trade now ready, and the priority bugaboo laid in the dust, plus the feeling of certainty as to his ability to make promised deliveries according to schedule, the unique methods which are the birthright of the American business man will have a chance to reassert themselves in foreign markets. A serious effort to capture this trade must now be made. It should not be difficult. Our resources are second to none; the Government is always ready to aid the opening of negotiations with foreign business houses and will furnish the very best kind of advice about the likes and dislikes of these customers. All that remains is to deliver the goods. There is no reason in the world why Americans cannot make themselves as popular with foreign purchasers as the Germans ever did, and display as great a readiness to cater to the whims upon the satisfying of which depend cordial relations. India, it is

true, is Britain's own; the trade there will be taken care of entirely by the English manufacturers, but China and South America belong largely to anybody who can first give their inhabitants what they want—and in the way they want it. In South America, German propaganda has made great inroads, but since the war the sympathies of the populace have been distinctly with the Allies. Moreover, there is naturally a desire to establish as many ties as possible with the Great Republic to the north because of its position as a champion of the interests of the western hemisphere, and this may be taken advantage of. In the case of China, the Celestial, as a type, cares not who sells him his dyes or anything else; he has no special warmth of feeling for any particular race or creed. The man who gives him the most for his money, and who puts his product up most closely in accordance with his notions of how such things should be done, will get his trade.

Government figures show that dyes, including both synthetic and natural, were exported from this country during the fiscal year which ended June 30, 1916, to the value of \$5,102,002; for the 1917 fiscal year, \$11,709,287, and for the 1918 fiscal year, \$16,921,888. Now that the war is over and the industry really enters its stride, the remaining eight months of the 1919 fiscal year may be expected to boost the value of these exports well over the \$22,000,000 mark. From then on, however, if prices drop in anything like the degree which might be expected, the increase valuation is not likely to keep pace with the increase in tonnage, for these figures are the result of an inflation in

the prices of dyes of from three to five times the prices prevailing before the war.

With such unlimited opportunities for intelligent expansion, with practically as much as we could wish in the way of raw materials, with a Government which has shown itself to be a staunch defender of the industry, and which has displayed a willingness to enact protective legislation, and with the general patriotic friendliness of the textile, paper, paint and leather trades, the result for which the dye manufacturers of this country have been struggling for ever since 1914 may boldly be said to have been attained with a completeness for which we scarcely dared to hope.

Without the ability to base our conclusions on actual figures, we yet feel safe in saying that the domestic situation is safe for the industry in this country. It is practically guaranteed. There is no longer any doubt

about it. The industry will live and prosper. Additional details of great importance will undoubtedly develop at the meeting of dye and intermediate manufacturers with the War Industries Board in Washington, which will have taken place by the time this publication is in the hands of its readers, but the outcome is as certain as though it were already a matter of history, and we may now fling back at the Germans their own words, spoken about the German dye industry at a meeting last summer of the German dye ring: "The future may be regarded with confidence!"

SOME DISTINGUISHING FEATURES OF ALIZARINE SAPPHIROLE B & SE

BY C. M. WHITTAKER, B.Sc.

Although in pre-war days there were more than two brands of Alizarine Sapphirole on the market, the B and SE marks were the best known and most important. Alizarine Sapphirole B was the first to be introduced and it was made by the sulphonation of 1.5 di-oxy-anthrachinone (Anthrarufine) to the disulphonic acid, the introduction of two nitro groups into the molecule followed by the reduction of the two nitro groups to amido groups. This color was possessed of excellent fastness to light, but it had one defect in that it was not fast to perspiration or strong saline solutions, such as seawater. To overcome this difficulty the mono sulphonic acid was introduced by the makers and it was found to possess greater fastness to perspiration and to saline solutions; this brand was distinguished by the letters SE, which letters are short for the German

schweissecht, otherwise "fast to perspiration."

There are many ways of distinguishing between the two brands, as they behave very differently under certain conditions. As is only to be expected from their constitution Alizarinè Sapphirole B is more soluble than Alizarine Sapphirole SE, owing to the presence of the additional sulphonic acid group. The solubility of neither type is very good, because if a 1 per cent solution of either type is made, the color commences to fall out of solution below 90 deg. C. As a matter of laboratory routine, solutions of these two colors should not be used at a greater concentration than 1 gr. in 1,000 c.c., otherwise discordant results from the same solution are liable to ensue.

LEVELLING PROPERTIES

Neither of these two types possess the levelling properties of Patent Blue, but of the two Alizarine Sapphirole B is better than SE in this respect, though neither may be used for salting at the boil with any degree of safety; the bath should be cooled down before any fresh addition is made. In actual solution Alizarine Sapphirole SE is much redder than B, whilst if strong sulphuric acid is added to the solution SE is completely precipitated, whilst B remains in solution.

A method of distinguishing the two brands when they are dyed on the fibre is to spot the fibre with 10 per cent sulphuric acid solution, and to allow to lie over-night. Alizarine Sapphirole B will develop a yellow spot, whilst Alizarine Sapphirole SE gives a dull maroon spot. If 1 per cent of Alizarine Sapphirole B and SE are dyed with 10 per cent Glauber's salt and 3 per cent sulphuric acid and 10 per cent copper sulphate is added to the dye-bath before the material is entered the B will dye on with very little change—the shade being greener—whereas the SE will only give a dull weak grey shade, due to the formation of an insoluble copper salt. Again, if dyed in

a neutral salt-bath, though neither color has a good affinity for wool under such conditions, the SE dyes better than the B, which may no doubt be attributed to the SE only having one sulphonic acid group as compared with the two sulphonic acid groups of the B.

Another distinguishing dyeing feature between Alizarine Sapphirole B and SE is provided by dyeing on woolen cloth with a silk stripe. It is well known that Alizarine Sapphirole B was recommended for dyeing woolen cloth containing silk effects, in which it is desired to leave the silk white, or subsequently to dye it a different shade so as to produce a shot effect; SE is not so good for this purpose. If Alizarine Sapphirole B and SE are dyed on woolen cloth with silk effects under exactly comparative conditions, it will be found that the SE stains the silk to a distinctly greater degree than does the B brand. Their behavior on being dyed on natural silk also provides some distinctive points. In the first place, Alizarine Sapphirole SE has a better affinity for the silk fibre than the Alizarine Sapphirole B, while if the dyeings are subsequently submitted to the water test—i. e., steeped in cold water for 24 hours—it will be found that practically all the B bleeds off the silk into the water, whilst the SE does not bleed to anything like the same extent as the B brand.

EXPOSURE TESTS

My exposure tests have not shown any difference in the fastness of the two brands to light, though, seeing that the B contains an extra sulphonic acid group as compared with the SE, it would not have been surprising had a difference manifested itself, because in the Azo class of dyestuffs the introduction of an additional sulphonic acid group has frequently a diminishing effect on the fastness to light.

Both brands of Alizarine Sapphirole B and SE were largely used in Great Britain, and were accepted as the standard of fastness to light in the dress

goods, hat and carpet trades, owing to the fastness to light surpassing that of any other Acid Blue. Alizarine Sapphirole was, and is, a difficult color to manufacture owing to it requiring so many distinct chemical operations, a fault in any of which would affect any subsequent stage in its manufacture. British Dyes Ltd. have, however, overcome these manufacturing difficulties and have put on the market British made Sapphirole, under the name of Alizarine Delphinol which has been found by experience on the big scale to be fully equal in fastness to light to the German product.

CHEVRONS

A recent application of Alizarine Delphinol has been in the dyeing of the material for the army and navy chevrons now being worn, to indicate years of service overseas. Those people who keep their eyes open will notice that

(Continued on page 17)

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REAL AND "CAMOUFLAGE" SALES OF ALIEN PROPERTY

There is no doubt that the activities of the Alien Property Custodian's office during recent months have rendered a tremendous service to the nation and that they have been effectual in destroying a great part of the German commercial machinery in this country.

So far as we have been able to judge, the sales of enemy-owned property which have been conducted by the Alien Property Custodian have been, in every instance, absolutely bona fide and have resulted in an entire divorcement of German interests from the properties sold. There is always a possibility, however, that under some "camouflage" or other a sale may be effected which will sooner or later restore the properties disposed of to their original owners or to others who are equally dangerous to American business.

Next week The Bayer Company is to be offered for sale at auction by the Alien Property Custodian. Under the terms of sale any American citizen is qualified to bid on the property, which will be awarded to the highest bidder, subject to the sanction and approval of certain committees who must pass upon the bone fide nature of the transaction.

In this connection it is rumored that I. J. R. Muurling, formerly president of the Farben Fabriken of Elberfeld, Germany, and later president of The

Bayer Company, intends either individually or as representing a syndicate to bid on the stock of The Bayer Company which is to be offered for sale. It goes without saying that should this rumor prove to be a fact and should Mr. Muurling or his syndicate be awarded the property, a sale to them could be little more than a "camouflage" operation of the flimsiest sort. Mr. Muurling is a man well along in years who has amassed a considerable personal fortune and who would not be likely to be interested in actively conducting such a business as that of The Bayer Company. Although Mr. Muurling is, we understand, a Hollander by birth, he is, nevertheless, a naturalized American citizen and as such is qualified to bid under the regulations promulgated by the Alien Property Custodian. The greater part of his life, however, has been devoted to the service of The Bayer Company and its parent, the Farben Fabriken. The obvious conclusion drawn by anyone conversant with the facts would be that any interest he might take in acquiring the property under an auction sale would be on behalf of his former associates.

The question of confirming a tentative sale made to the highest bidder at auction rests, fortunately, in the hands of several committees who have thirty days in which to investigate all the circumstances surrounding the sale before making it final. There is no doubt in our minds that should Mr. Muurling or his syndicate prove to be the successful bidder, the various committees in question would invalidate the sale for the obvious reasons above mentioned. We sincerely trust, however, that Mr. Muurling will have the good taste to render such action unnecessary by refraining from participating as a bidder when the sale takes place. If, by any chance, he or his syndicate should prove to be successful bidders, we trust that the dyestuff industry as a whole will protest so vehemently that there will be no possibility of the sale being confirmed.

AMERICAN DYESTUFF TRADE WITH THE ORIENT

By E. H. KILLHEFFER

Editor's Note: The following article, by Dr. Killheffer, of the Newport Chemical Works, points out very clearly the "open sesame" of satisfactory relations between dyestuff manufacturer and consumer—whether in the domestic or foreign markets. There is no question but that absolute integrity both in product and practice—that is, both in manufacturing and sales departments—must be maintained if the American dyestuff industry is to secure and hold the position, both at home and abroad, to which the capital and labor invested therein entitle it.

In the REPORTER for November 4th there is published an interview with Mr. Mizutani, which is the inspiration of this reply.

At the outset, it might be well to call to mind some of the conditions which obtained in the Oriental dyestuff market in normal or pre-war times. To those of us who have been privileged to reside in the Orient for any length of time and transact dyestuff business, information regarding qualities has been directly acquired and is therefore accurate. In my own case, I purchased in the Oriental market very considerable quantities of stocks which they had on hand shortly after the outbreak of the war, for shipment to and use in this country, and in so doing had occasion to personally examine the quality of most—if not all—of the dyestuffs used in that market.

On the other hand, piecemeal or hearsay information as to qualities used in the Orient has been quite general in this country. For illustration: It is a fact that very widely differing qualities of one and the same color have been used. Now it does not require a very great stretch of imagination to understand how "fractional information" of this sort would put great temptation in the minds and hands of a great

many concerns whose sole aim has been to make as much as possible out of the dyestuff business "while the going was good."

All this is said not in a spirit of excuse or justification, but in my opinion does explain the reason or motive behind a practice which every reputable manufacturer knows exists and the evil effects of which all of us feel. Furthermore, the very urgent demand and the very limited supply has also played a large part in this much to be condemned practice, for the concerns whose aims were referred to before have simply gambled on market conditions to the extent that they figured practically anything would "get by," and that once the goods themselves were far away, the chances were they would not come back. Under these conditions adulteration and misrepresentation have gone merrily on.

That this is all logical and true, witness conditions in our own market. How many lawsuits are now pending, based on the same practices, and how many cases where there is ground for suit would not be pressed but for the determination of the victim to make the best of it?

The fact of the whole matter is that in these abnormal times there have been two kinds of development in our domestic dyestuff industry—one a very creditable one which we can call legitimate development. This is by far the smaller percentage—numerically at least—and in this class are the *actual manufacturers* who, through trials and tribulations, good experience and bad, have constantly labored to actually create an industry here to stay.

The second kind of development has been what we may for comparison call illegitimate, and in this class fall by far the larger number of concerns.

Both classes have one thing in common—they are in business to make money; but one has large investments and consequently risks in order to profit—the other has not.

This train of thought could be dwelt upon at much greater length, but I

think the outline as given sufficiently illustrates the point I have in mind. In passing, I might say that there is a small class of manufacturers who are really on the borderland between the two classes above referred to and who in some cases are, no doubt, guilty of the practices referred to by Mr. Mizutani, either through lack of experience in or ignorance of the dyestuff business.

Just as Mr. Mizutani suggests our dealing through regular well known Japanese importing firms or agencies, I would suggest such firms or agencies dealing as far as possible with reputable American manufacturers. This does not necessarily mean dealing directly in all cases, as it is certainly a very logical procedure to handle foreign business through well recognized importing or exporting houses, but this in turn does not preclude close relations between buyer and manufacturer.

I believe I can safely speak for all reputable American manufacturers to this extent—that it is our desire to furnish the best in merchandise and to stand squarely behind our goods. Buying or selling on sample, therefore, is perfectly safe if the dealings are between firms of repute.

I believe that our Japanese friends will agree that all of their experiences have not been of the disappointing kind, although, no doubt, there is great cause for complaint in a great many cases and I believe the percentage of disappointing or satisfactory cases will correspond very closely to the per-

centage relationship of the two classes of development above referred to.

To sum up, the same rule applies as to all merchandising transactions; that is to say, the dealings should be with firms whose name and reputation stand for something and who will at all hazards back up that reputation to the fullest extent.

THE DYER AND HIS LOVE

My darling is kind and true—

I simply love her eyes of Alizarine Delphinol;

By kisses sweet our love is fed

From lips so luscious and so Acid Magenta;

She offers to no other fellow

A lock of hair so brightly Citronine R;

Her dress, the daintiest ever seen,

Is of the latest shade of Gallocyanine BD Paste;

Her little hat (velours, I *think*)

For garniture has ribbons Chrysoidine YRP.

And so her charms I've thought it right

Here to set down in Nigrosine G and—
White!

—Punch.

BUR DYEING

Vegetable specks in wool goods frequently make it necessary to bur-dye the pieces. This is done in the washing machine after the cloth is rinsed. If properly made and used cold the bath should have no effect upon the color of the wool. A good liquid bur-dye is made as follows: 50 pounds solid extract of logwood, 25 pounds soda ash, 12 pounds sulphate of copper.

Dissolve the logwood and sulphate of copper in water, then add the soda ash slowly, and boil. The strength and quantity of the dye depend upon the character and weight of the cloth. Enough logwood, soda ash and sulphate of copper are dissolved in a barrel, so that when the barrel is filled with water the dye will be strong enough to make three or four barreelfuls for use. Allow the goods to drain well before applying the dye, then close the gates and allow the pieces to run in the dye ten to fifteen minutes. Rinse well and extract.

Another method is as follows for 135

pounds of cloth: Steep one and a half pailfuls of ground sumac about half an hour and turn this solution into enough cold water to run the pieces in. Run one hour, then wind in a reel and let drain, after which enter the pieces in another cold bath made with 10 pounds of copperas and one pailful of pyrolignite of iron. Run for half an hour, then take out and wash.

This is suited for piece dyed goods. In using the process always rake the baths well before tentering the goods.

HYDRO-EXTRACTING

After washing, the goods are well whizzed for the next operation. If they are to go directly to the dryer, they should be thoroughly extracted; but if to be napped, enough moisture should be left to facilitate the work, and avoid any danger of impairing the strength of the cloth, which might result from napping the cloth when too dry.

The subsequent treatment of the goods in the finishing process depends very largely upon the kind and character of the cloth and the finish desired. It is impossible to lay down definite rules for all cases, as the treatment must be changed to suit the requirements. Not only different classes of goods, but cloths of the same class often require different treatment to secure the effect desired.

The cassimere, broadcloth, cheviot, melton and chinchilla require different treatments in some parts of the process. Other goods may require some of the same operations. The kersey and beaver require the steam or luster finish, the same as broadcloth, and mackinaw is not unlike the melton in finish.

In finishing cassimeres and goods requiring the steam or luster finish, nap-

ping is a very important operation. The machines employed for this work are the teasel gig and the wire napper. The latter is accepted as an improvement over the former because of the amount of work it can turn off, but for real excellence of results nothing can equal the teasel gig when properly used. There are a number of types of teasel gigs, the up-and-down, the double-acting, the double-cylinder and the steam gig. The up-and-down is an old-time type. The cloth is attached to a top and bottom leader and run up and down, coming in contact with the teasels only once at each passage. If it is required to reverse the nap it becomes necessary to take off and reverse the piece.

The double-acting gig is arranged to run the cylinder in either direction. To reverse the nap it is necessary to turn the teasel slats and reverse the motion of the cylinder. With this machine the cloth comes in contact with the teasels on each side of the machine. The double-cylinder machine has two cylinders which can be run in the same or opposite directions as may be desired. Running the cylinders in opposite directions reverses the nap. This machine is very effective in raising a thick nap such as is required on luster-finished goods.

The steam gig is similar to the up-and-down machine, but has a hollow, perforated copper roll and a winding attachment for securing a luster finish.

The gig cylinder is equipped with twenty-four removable slats or teasel frames, and setting the teasels in these

slats is of importance in securing uniform and perfect work.

The teasels should be as nearly uniform in size as possible, and the best results are secured by putting the smaller teasels in the top and the larger in the bottom row.

The teasels are first put into a basket or barrel having holes in the bottom. Boiling water is dashed over them, and they are immediately covered with a cloth. This softens the teasels so that they are more easily handled and more closely set in the slats. The water should run off immediately. If the teasels become too wet, the moisture in the pitch is liable to injure the teasel. Because of this it is best to prepare only a few slats at a time and have them promptly set and dried.

THE WIRE NAPPER

The cylinder of the wire napper contains a series of wire-covered rolls so constructed that as the cylinder turns forward the rolls revolve backward. This backward movement of the rolls eliminates the severe action of the wire upon the cloth that would otherwise result, and the nap is produced by a repeated picking up of the fibers rather than by a dragging effect. This quickly raises a thick nap, but where the luster finish is desired the best results can be secured by following with a few runs on the teasel gig to lay the nap more thoroughly.

THE CASSIMERE FINISH

The cassimere is supposed to show the pattern or figure effect of the weave or

the arrangement of the colors, and should be finished close enough to bring out the design clearly.

The four harness twill weave, two up and two down, is frequently termed the cassimere weave, but the cassimere is not strictly confined to this weave. Where the design is entirely dependent upon the arrangement of the colors this weave is commonly used.

In fulled goods the pattern is more or less obscured by the felt, and must be cleared by the napping and shearing. The amount of napping required depends very largely upon the felt in the cloth. Careful oversight and good judgment are necessary to secure good results and avoid making the cloth tender.

MOISTENING THE GOODS

The gig should have a perforated water pipe for moistening the pieces during the napping process. The cloth should have all the moisture it will carry without showing a glazed effect on the surface. The right amount of moisture prevents excessive waste of fiber, and keeps the teasels from injuring the threads as the work nears completion.

STARTING WITH OLD TEASELS

The slats selected for starting the work should be filled with worn teasels so as to act very gently upon the cloth until a fairly good nap is secured. From four to six runs on the double-acting machine should be enough.

Following this a better grade of work, that is, sharper teasels, should be introduced by removing every fourth slat and putting in six slats of better teasels.

After four to six more runs, repeat the change by putting in a set of a still better grade, placing them midway between those of the other set. This procedure may be followed as required, but the number of changes and sets of slats to be used depends entirely upon the felted condition of the cloth, and can be determined only by the judgment of the finisher.

Goods constructed on the worsted principle and having but little fulling may require only the first grade of teasels, while the more heavily felted cloth may require several changes. For these reasons there can be no definite rules to govern the work.

THE PROGRESS OF THE WORK

The finisher should make an occasional examination of the cloth by parting the nap to determine how the work is proceeding. When the threads show up round and clear, the nap should be reversed by turning the cloth end for end if on the up-and-down gig, or by turning the slats and reversing the cylinder if the double-acting gig is used. After this operation, give enough runs to turn the nap and no more. This leaves the nap in a lofty condition that insures against a sharp and "barby" feel to the finished cloth.

If the double-cylinder gig is used, the reversing is not necessary, as the cylinders can be run in opposite directions, which is equivalent to reversing the nap. Both cylinders should be run in the same direction at the end of the process.

Slats filled with medium and better

grades of teasels may often be turned to use the opposite side instead of using another set.

When both sides of a set of slats have been used they should be taken out and thoroughly dried, thus renewing their usefulness and preventing the injury that is sure to result when the pith of the teasel remains wet.

In breaking in a new set of slats, it is best to flock the teasels to avoid their taking hold of the cloth too strongly. The teasels may be cleaned in the cylinder by the use of a hand-card, or when out of the cylinder by the use of a revolving brush made for the purpose.

If the wire napper instead of teasel gig is used, care should be taken to set the cloth on very lightly at first. There will be no need of reversing the nap, as it does not become so thoroughly laid as by the teasel gig.—*Textiles*.

ALIZARINE SAPPHIROLE

(Continued from page 9)

many blue chevrons worn have faded to a pale grey; this will not readily happen when Alizarine Delphinol is used.

My experience with this color has taught me that a word of warning is necessary in the application of Aliza-

rine Delphinol. Many people have assumed that it is an easy levelling color, and that it may be salted into the bath like Patent Blue A; such assumption has naturally led to uneven results. No claim has ever been made for Alizarine Delphinol that it is as easy levelling as Patent Blue; on the contrary, it is definitely stated not to be, in the same way as Alizarine Sapphirole was understood not to possess similar levelling properties to Patent Blue. This was most practically acknowledged by the fact, that a cheaper type of Sapphirole was on the market, which was a mixture of Alizarine Sapphirole and Patent Blue. This was naturally more easy levelling than pure Alizarine Sapphirole, but was proportionately inferior in fastness to light.—*Dyer and Calico Printer*.

Editor's Note:—It is announced by the National Aniline & Chemical Company, Inc., that the dyestuffs discussed in the above article will be ready for quantity delivery early in 1919.

With a capital of \$750,000, the Chapin Chemical Company has been incorporated under the laws of Delaware to manufacture chemicals.

NOTES OF THE TRADE

Due to rapid expansion involving the erection of its new plant at Ashland, Mass., the United States Color & Chemical Company, 42 Broad Street, Boston, has increased its capital from \$25,000 to \$500,000. This increase was undertaken with the approval of the Capital Issues Committee. The company manufactures H-acid on a large scale and has a full line of alizarine yellows and browns, chrome red, anthracene brown and soluble nigrosines.

The recent epidemic of Spanish influenza was also seriously felt in England, and took its toll from the dye-works, particularly in the Midlands section, where large numbers of operatives suffered attacks to the pronounced detriment of business. The period of sickness in these cases was reported to have been unusually long, some of the men remaining away from their posts from six to fourteen days.

The Seydel Manufacturing Company, Jersey City, N. J., has filed plans for the erection of an extension to its plant on Forrest Street, that city.

A leak in a still which contained oils used in the manufacture of aniline dyes caused an explosion recently in the Canarsie works of the National Aniline & Chemical Company. In the resulting conflagration two men were seriously injured and eight others sustained severe burns.

An estimated loss of \$65,000 resulted when fire recently destroyed a portion of the still house at the plant of the former Federal Dye & Chemical Com-

pany, now known as the Union Dyestuff and Chemical Company, located at Kingsport, Tenn.

The Newport Chemical Works is contemplating the erection of an addition to its plant at Carrollville, Wis., to provide for increased operations. The headquarters of the company are in the First National Bank Building, Milwaukee.

American Aniline Products, Inc., New York, have brought suit in the Supreme Court of that State against the Lavonia Dye Company, of Georgia, for the recovery of \$3,472, alleged to be due from the sale of dyestuffs last year.

The band composed of employees of the Ault & Wiborg Company, Cincinnati, literally "played" a prominent part in the local celebration of the signing of the armistice. The musicians in question regaled the cheering throngs with a number of patriotic selections from the steps of the city hall, while a large delegation from the company took part in the subsequent peace parade.

NEWBERT CO. EXPANDS

The notable expansion of the Newbert Color Co., of 88 Broad Street, Boston, during the fifteen years they have been in business has been further emphasized by their becoming selling agents for Walter F. Sykes & Co., who have American selling rights for the color products of the St. Denis Company of France. The Newbert Color Co. are the New England agents for the Stamford Extract Manufacturing Co. They also handle the Sumac products of William P. Miller, of Milford, Virginia, and represent the Yancy Bark Co., manufacturers of chestnut and bark extracts, in the same state, and also the Warner Chemical Works, of Warner, New Hampshire, manufacturers of iron liquor and other textile chemicals.



AMERICAN DYESTUFF REPORTER

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3

New York, December 2, 1918

No. 23

THE BAYER COMPANY SALE

An Account of the History of This Concern and of
the Properties to Be Transferred at Tuesday's Auction

THE activities of Alien Property Custodian A. Mitchell Palmer will center this week upon at least one event of extreme interest to the dye fraternity—the sale of the entire capital stock of the Bayer Company. Not alone because of the magnitude and fame of the organization, but likewise because of the dramatic events which attended its seizure for the United States Government by Mr. Palmer, involving as they did the arrest of five of the officials, will the attention of the trade be focussed upon this approaching transaction which will result in the passage of the property into the hands of American capitalists.

In view of the importance of the sale, which will be held on Tuesday at Rensselaer, N. Y., a brief review of the progress of the company, together with the subsidiary properties and interests identified with it and likewise to be placed under the auctioneer's hammer, will not be out of place. Other companies to be sold under similar conditions in the near future, including the Heyden Chemical Company, the property of George Benda, manufacturer of "Bendalin"

bronze powders; International Textiles, Inc., the Garfield Worsted Mills, the Bauer Chemical Company and the Williamsburg Chemical Company, will be taken up in subsequent issues.

The beginning of the Bayer influence upon the dye markets of this country dates back forty years, when, in 1878, the firm of Friedrich Bayer & Co., of Leverkusen, Germany, manufacturers of dyestuffs, began the sale of its products in the United States through the selling agency of Preiss & Rumpf, of New York City, and later through Ernst Sehlbach & Co., another New York concern. At this time a number of American manufacturers were attempting to produce aniline dyes, and among them was a New York corporation known as the Hudson River Aniline Color Works, with a plant at Rensselaer.

Later on, this company employed the Sehlbach concern as its sole selling agent and the latter acquired a one-fourth interest in the stock of the Hudson River organization. It was mutually agreed that the Hudson River company should be limited to the manufacture of such dyes as

could not be profitably imported from Germany, and this arrangement continued until 1895, when Ernst Sehlbach & Co. was dissolved.

The Farbenfabriken of Elberfeld Company, a New York corporation, was then organized to act as the selling agents for both the German and American firms. The restrictions upon the products of the Hudson River company, however, soon led to the formation by Louis Waldman, its president, of the American Color & Chemical Company. The new concern built a factory at Albany, and attempted so successfully the manufacture of aniline dyes, especially blacks, that the corporate successor of the German Bayer firm, known as the "Farbenfabriken, vormals Friedrich Bayer & Co.," proceeded to buy up all the stock of both American concerns. They then dismantled the plant at Albany and transported its equipment to the Rensselaer factory.

This transfer of ownership marked the beginning of the manufacture of

pharmaceutical goods at the Rensselaer plant, of which acetyl salicylic acid, or "Aspirin," which was made under the original Hoffman patent, then owned by the new German Farbenfabriken, became one of the principal products. Meanwhile the Farbenfabriken of Elberfeld Company, the American concern, continued to act as selling agents for the products imported from Germany and the products of the Rensselaer plant until 1913, when it was reorganized by the incorporation, on June 12 of that year, of the Bayer Company, Inc., the company now about to be sold, and of the Synthetic Patents Company, Inc.

The real estate upon which was located the Rensselaer plant, together with all the United States patents owned by the Farbenfabriken of Elberfeld Company, were then transferred to the Synthetic Patents Company, while the Farbenfabriken, vormals Friedrich Bayer, also executed to this concern a blanket assignment of many of the United States patents standing in its name. Equipment, machinery, supplies, manufactured goods, trade-marks and sales rights were made over to the Bayer Company, which latter simultaneously took from the Synthetic Patents Company a lease of the real estate upon which the Rensselaer plant was located and a license to manufacture under the patents owned by that company. This transaction was followed by the dissolution of the Farbenfabriken of Elberfeld Company, and the capital of the Hudson River Aniline Works was reduced to only \$820.

Subsequent operations left the Bayer Company in full control of produc-

tion and sales, the position of the Synthetic Patents Company being merely that of a holding company for real estate and patents.

The Bayer Company was incorporated with a capital stock of \$750,000, consisting of 2,250 shares of 8 per cent cumulative preferred stock and 5,250 shares of common stock, of par value of \$100 each, all of which is now outstanding. The Synthetic Patents Company, Inc., was incorporated with a capital stock of \$50,000, consisting of 500 shares of the par value of \$100 each, all of which is outstanding.

About two years before control was assumed by the Alien Property Custodian, there had been organized in Providence, R. I., for the manufacture of sulphur dyes, a corporation known as the Williams & Crowell Color Company, which had been incorporated under the laws of that State. Early in the present year a New York corporation, also known as the Williams & Crowell Color

Company, was organized, with a capital stock of \$100,000, by interests identified with the Bayer Company, and the new firm acquired the properties of the Rhode Island concern. The stock of the New York corporation has since been taken over by the Bayer Company.

On January 15, 1918, the entire outstanding stock of both the Bayer Company and the Synthetic Products Company stood in the name of H. C. A. Seebohm, one of the officials arrested later, who held it for Carl Duisberg, Christian Hess and Rudolph Mann, stockholders of the Farbenfabriken, vormals Friedrich Bayer & Co., and it was on this date that all the stock was seized by and transferred to Alien Property Custodian Palmer.

The sale, then, will mean the offering to bidders of the stock of both companies enumerated above which on the date of seizure stood in the name of H. C. A. Seebohm. It likewise includes the stock of the Williams & Crowell Color Company, of New York, which, having been taken over by the Bayer Company, will pass to the purchaser as an asset of the latter concern.

The plant of the Bayer Company at Rensselaer is located on the east bank of the Hudson River opposite Albany, and is about 142 miles from New York City. It covers about seventy-five acres of land and consists of twenty buildings in the manufacturing group. The total floor area is 288,463 square feet, of which 201,588 are utilized by the dyestuff department. In addition to the equipment used directly in making dyestuffs, it also boasts special apparatus for the manufacture of raw and inter-

mediate materials which includes a nitric acid plant with a daily capacity of 6,000 pounds, a sulphuric acid plant with a daily capacity of 12,000 pounds, a nitrite plant, a hydrochloric acid plant, apparatus for making nitrobenzol, dinitrochlorbenzol, dinitrotoluol, aniline oil and amido oil.

The terms of the impending sale likewise provide that numerous patents and patent rights are to be disposed of. In this connection it is said that the dyestuffs and pharmaceuticals now produced by the Bayer Company are not claimed to be produced under patented processes. The patent rights owned by the Synthetic Patents Company and those to be sold by the Alien Property Custodian are believed to include, however, all outstanding United States patents for dyestuffs and pharmaceuticals manufactured by the German company, Farbenfabriken, vormals Friedrich Bayer & Co.

The trade-marks and trade-names under which many of the Bayer

Company's pharmaceuticals are marketed were assigned to the Bayer Company by Farbenfabriken of Elberfeld Company, of New York, and Farbenfabriken, vormals Friedrich Bayer & Co., of Leverkusen, in 1913, and are reported to be legally vested in the Bayer Company. Some additional trade-marks have since been registered by the Bayer Company.

The Bayer Company is reported to have some special methods of manufacture in the nature of secret processes not possessed by other American concerns, and which are said to be of considerable utility and value.

There is every reason for supposing that the bidding will be sharp, as the property is extremely valuable and in excellent shape, but the name of the successful bidder may possibly not be known for nearly a month. In the meantime the result will be awaited with a great deal of interest by those of the trade, who may rest assured that the company will pass to none other than loyal Americans.

AMERICAN DYESTUFF REPORTER

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 butions appreciated.

A. P. HOWES, Publisher
 LAURANCE T. CLARK, Editor

GRAFT

On a recent trip through New England the publisher of the REPORTER was rather surprised to hear reports of several alleged cases of graft by purchasers of dyestuffs at several different mills. It had been our impression that this evil was very nearly eliminated but, from the nature of the reports which reached us on this trip, we were reluctantly compelled to believe that this is by no means the case. It would seem that there can have been no good reason why practices of this kind should have been indulged in during the last year or so, because of the fact that desirable dyestuffs have been so extremely scarce that it has been strictly a sellers' market with no great amount of persuasion needed to effect a sale where goods were available.

It is probable that the near future will see competition becoming constantly more keen among the various manufacturers, and one temptation which will undoubtedly arise will be to return to the old method—so uniformly adopted by the German companies in this country—of offering all kinds of inducements to dyers and purchasing agents to swing business their way. We know that several of the most prominent American manufacturers have set their faces definitely and unalterably against practices of this kind and we believe that in the end they will compel all others to adopt equally honest methods, but in the meantime it should be the duty of everyone who is sincerely interested in the development of a permanent American industry to see to it that any instances of unethical prac-

tices of this sort are given unsparing publicity, and that wherever possible the guilty parties, both donor and recipient, are brought to task.

The REPORTER will lend its co-operation most heartily to any efforts leading toward the elimination of this very grave evil. We shall be glad to take upon ourselves the burden of endeavoring to substantiate any reported instances of graft which are brought to our attention, and if we are able to secure proof will publish the full facts, without regard as to whom they may affect.

THE BAYER COMPANY

The stock of the Bayer Company is to be sold on Tuesday by Alien Property Custodian Palmer. We have the greatest confidence in the ability of this gentleman and his associates to see to it that the tangible assets of the German dyestuff manufacturers in this country are permanently placed under American control. It is for the American consumers to make sure that their intangible assets or "good-will" are as effectually transferred to American hands.

WHY NOT?

Knowing as we do that white light is composed of violet, blue, green, yellow and red, and also that the coal-tar dyes of to-day cover all the hues of the spectrum, we naturally ask the question: Where is aniline white?

We are told immediately and from all sides that "there ain't no such animal." True, but why not? It seems so simple. Let us assume that we have all the dominant colors (red, blue and yellow) and the subordinates (orange, green and violet) before us in their pure state. So far, so good. Our next step is to make solutions of the required strength and tinctorial power of each of these colors, and the rest is easy. All that remains to be done is to mix these solutions in proper proportions and we have—well, we still have the question: Where is aniline white?
 C. B. D.

THE GERMAN MYTH, DISCREDITED HERE, GAINS NEW LEASE OF LIFE IN NEUTRAL MARKETS

If we mistake not, it was George Horace Lorimer who, in that entertaining work of fiction, "*Jack Spurlock, Prodigal*," uttered through the mouth of one of his characters in the book (an advertising man, by the way) the following great truth: "Jack, my boy, if you tell people *anything* long enough and loud enough, they'll believe it." These may not be the exact words of the character alluded to, but the soundness of the logic has been demonstrated times without number, and it was literally thus that the Germans slowly and painstakingly erected the great structure of lies and fabrications which eventually caused them to be regarded, by otherwise intelligent persons, as supermen.

Articles beyond counting have been published in this and other journals to lay bare the downright thievery practiced by the aspiring Hun in his efforts to share in the glory of another's creations. "Germany's Stolen Chemistry," by

Prof. Townes R. Leigh in *Drug and Chemical Markets*, and Mr. E. C. Klipstein's most interesting character analysis of the Teuton's forebears clear back to the Dark Ages, are both worthy of perusal in this connection. But the war is now over, and some day these things, through cessation of the endless and commendable publicity which they have hitherto enjoyed, may be crowded out of our minds by more immediate and pressing matters. This, in the opinion of Mr. George H. Davis, of Newark, N. J., must not be allowed to take place, and we quite agree with him. It is his belief that continued emphasis should be laid upon the fact that German "superiority" in the arts and sciences existed only in the minds of the Germans themselves, to begin with, and only later gained credence outside that country through the vigorous application of the principle set forth in the first paragraph. In this connection, Mr. Davis has sent us two clippings from the *New York Evening Sun*, which, while they do not deal directly with the dye industry, are nevertheless sufficiently pertinent to the problems confronting its followers, and illuminating as regards German methods, to make them of considerable interest to our readers.

The first of these appeared in a recent issue of the newspaper referred to, and has to do with coming German movements for recapturing the trade of South and Central America, Spain and Italy. The special correspondent of the *Evening Sun* writes from Wash-

ington that "Evidences are arriving from many sources that Germany is planning a new world war—a trade war—at the very moment when her Foreign Secretary and Premier are begging the Allies for food."

"The efforts so far disclosed," he continues, "are aimed at killing off American competition in South and Central America, in Italy, and in European neutral countries. Typical German trade tricks are to be used in crowding out competitors in the markets which Germany formerly controlled, or in which her tradesmen had a large interest.

"As soon as transportation is available, large consignments of German products are to be dumped on South and Central American markets at prices in many cases actually below the cost of manufacture and transportation. . . . Information was received in Washington . . . of some of the purposes of a certain German Economic Association for South and Central America. One of the functions of this organization will be the gathering of much data concerning the demand for raw materials, the existing trade relations, the available supply of labor and its capacity for extension, means of communication and their developments, shipping, electricity and coal supply, housing conditions, cost of living, etc.

"German propaganda, which was rife in South and Central American countries for a large part of the war and, in some instances, throughout

the war, will be revived, but in somewhat different dress, according to the plans which have been revealed here. . . .

"It is the plan continually to publish in the papers and magazines of these countries articles on Germany not only relating to commerce and industry, but also on science, social conditions and general matters."

Still more interesting is that portion of the article dealing with the purpose to exchange members of teaching staffs between Germany and these countries, to provide scholarships at German universities and clinical hospitals to their inhabitants, and to flood the countries in question with German lecturers and scientists, bankers, agriculturists, physicians, manufacturers and politicians. According to a press report mentioned in the article, the campaign in Italy is already in full swing. The learning of Spanish will be encouraged in the German schools.

The article concludes with this paragraph:

"German industrial and exporting interests are said to have gained control of Swiss firms, and by retaining the semblance of Swiss ownership to have begun flooding the Italian market with German dyes and other products, most of them at prices considerably below the market price. German agents have been in Italy probably all during the war, waiting for the time when the commercial war would begin. The same is known

to be true in South and Central America."

The second clipping sent us by Mr. Davis is one of a series of articles by Newell Dwight Hillis on matters of general interest, and is headed: "German Superiority; A Myth That Has Exploded." While the article in question was printed, nearly six months ago, and has no direct bearing on the foregoing, which shows that the Germans mean to fight to the last ditch for their export trade, it has been deemed of sufficient interest for reproduction in these columns. It reveals the hollowness of the Teutonic assumption of omniscience: and while it is true that the "myth" has undoubtedly been "exploded" in this country, it is yet current in many others, and will continue to flourish unless powerful efforts are made to choke it off. The article, which is copyrighted by the Twenty-first Century Press, Inc., follows, in full:

Several years before the great war began a Dutch humorist wrote a play on the German megalomania. He portrayed a German school room in Prussia. Thirty or forty embryonic Prussians are at the desks and a Prussian schoolmaster is in the chair.

"Children, what is the greatest country in the world?"

All shouted vociferously, "Germany!"

"What is the greatest city in the world?"

"Berlin!"

"Who is the greatest man in the world?"

"The Kaiser!"

"Should there ever be, children, a vacancy in the Trinity, who is best fitted to fill the position?"

"The Crown Prince!"

"Who are the chosen people of the good old German God?"

"The German people!"

Never was there a finer bit of sarcasm, and yet the Germans were never able to understand the play. The Kaiser, the War Staff, the Cabinet, down to the last wretched creature working in the stables and the sewers, reading the play, exclaimed:

"What is the man driving at? Why, of course the Germans are the greatest people in the world—we admit it!"

Now, during the last few years the Germans have spent untold millions in propagating this myth of superiority, and yet the German intellect has never even had a second-rate position. Call the roll of all the tools that have redeemed men from drudgery and you will find that Germany's contributions are hopelessly inferior to the other nations.

The new industrial era began with the locomotive and steamship; James Watt invented the one and Stevenson the other.

The new era of physical comfort began with the loom; a Frenchman named Jacquard and an Englishman named Arkwright made men warm for their work in winter. Garments within the reach of the poor man in forest and factory, field and mine, means the cotton gin, and that gin is the gift of an American. The sewing machine changed woman's position, but the world owes that to our own Elias Howe.

We owe the telegraph to an English inventor and in part to Morse. We owe the cable in part to Lord Kelvin and in part to Cyrus Field. We owe the telephone to Bell and the wireless to Marconi.

Holland invented the submarine, Wright the airplane, McCormick the reaper and Edison the phonograph.

An American invented the German submarine; an American invented the German torpedo; an American invented the German machine guns; an American invented the Murphy button, the yellow fever antitoxin, the Dakin solution.

An English physician discovered the circulation of the blood, Jenner gave us vaccination, Lister antiseptics, France the Pasteur serums and the Curie radio discoveries, while a Bulgarian, Dr. Metchnikoff, discovered the enemies of the blood.

It was from France, England and the United States that Germany stole

the typewriter, the steel building, the use of rubber, the aniline dyes, reinforced concrete bridges, the air brakes, the use of electricity.

One of the most amazing volumes in the world is the "History of Tools and Machinery." We have all known for a long time that there is not one single German name among the eight great masters of painting that begins with Rembrandt and includes men like Valasquez and Giotto. We have long known that there is no German sculptor of the first class nor a German sculptor that is within 10,000 leagues of Rodin, Michael Angelo or Phidias. We have long known that Schubert and Schumann and Rubinstein and Haydn and Chopin were all Jews, and that three-fourths of the other so-called German musicians were Jews whose ancestors suffered such frightful political disabilities in Germany and were so regularly looted of all their property that they gave up their Hebrew names and took German, just as now thousands upon thousands of Germans in this country, ashamed of their names, are Americanizing their family title.

The simple fact is that if a Jew will only write the creative music, like that of Beethoven, a German whose gift is detail will conduct the orchestra.

The German can standardize a machine, providing an Englishman, a Frenchman or an American will first invent it. The German will gather up the remnants and scraps and odds and ends in a clothing factory—but,

oh, think of an American gentleman having to wear the coat that was cut by a tailor in Berlin or Munich! Having during ten different summers looked at their garments, all one can say is that the German men and women are covered up but not clothed.

For thirty years the Germans have paid their representatives to stand on the corner of the street and bawl out to every passer-by: "Great is the Kaiser! Great are we Germans! Let all people with cymbals, sackbut, shawms and saltery cry aloud, saying, 'Great is the Kaiser and all his people!'"

And now suddenly the myth has burst like a bubble. The delusion is exploded. The Kaiser has found out that it is dangerous to blow too much hot air into a German bladder.

Measured around the stomach in the Hofbraus in the presence of a barrel of beer, the Prussian and the Bavarian are great; but the hat band requires the least material of any made in four countries.

For the time has come to confess this simple fact that for any one great tool, or art, or contribution to science created by a German there are four invented by either an American, an Englishman or a Frenchman.

JOHN BULL'S ALKALI OUTPUT

According to the recently published annual report on the production of alkali in the United Kingdom, the total number of works registered during 1917 was 1,582, or 22 more than in 1916. The use of nitre-cake as a substitute for sulphuric acid for the decomposition of salt in salt-cake furnaces was further increased during the year, so that the relative production of hydrochloric acid per unit of salt-cake was again lessened. A new plant for the production of alkali by electrolytic methods is expected to influence manufacturing results, according to the report. About 50,000 tons of potash are carried away annually in the gases from iron blast furnaces in Great Britain,

while in the manufacture of sulphuric acid the application of catalytic methods for supplying the nitrogen compounds for the operation of the chamber process, was an innovation. The ammonia products manufactured from gas liquor in 1917 were said to be considerably less than in the preceding year, in spite of the inferior quality of the coal during 1916.

NOTES OF THE TRADE

With a capital of \$100,000 the Standard Chemical Works has been incorporated at Reading, Pa., to manufacture chemicals and allied products. Jacob H. Reichert is the principal incorporator.

Notice has been filed by the Palatine Aniline & Chemical Corporation, Poughkeepsie, N. Y., of an increase in its capital from \$150,000 to \$300,000 for expansion.

Companies to be sold by Alien Property Custodian A. Mitchell Palmer of interest to the dye trade, include the following: The General Ceramics Company, on December 16; the Bauer Chemical Company, Inc., on December 21; the New Brunswick Chemical Company, on January 8; the Williamsburg Chemical Company, Inc., on January 15, and the Chromos Chemical Company, Inc., on February 4.

The Standard Color Company, with main office and laboratory at 104 Broad Street, Boston, Mass., and a branch office in Providence, R. I., has leased the five-story building at 100 Wooster Street, New York City, and expects to occupy this property at once.

Plans have been filed by the Seydel

Manufacturing Company, whose plant is on Forrest Street, Jersey City, for the erection of a new extension to its works.

To manufacture dyes, chemicals, etc., the Dye & Chemical Manufacturing Corporation has been incorporated with a capital of \$100,000 under the laws of New York State. The headquarters of the concern will be located in New York City.

The Linion Aniline & Chemical Products Corporation has been incorporated under the laws of New York State with a capital of \$25,000 to manufacture dyes and chemicals. The main office will be in New York City.

Plans are being prepared by the Exchange By-Products Company, Corona, Cal., for the reconstruction of one of the buildings at its plant recently destroyed by fire, with an estimated loss of \$50,000.

A factory building at Williamson and Grove Streets, Elizabeth, N. J., has been leased for use as a branch plant by the O. J. Weeks Company, of New York.

To manufacture dyes and chemicals, the Valento Chemical Company has been incorporated under the laws of Illinois with a capital stock of \$25,000. Headquarters of the company will be in Chicago.

The Brooklyn Potash Company, Inc., has been incorporated under the laws of New York with a capital of \$50,000 to manufacture dyes and chemicals. Head office will be in Brooklyn.

The John P. Marston Company has been incorporated under the laws of Massachusetts to manufacture, import and export dyes, chemicals and dye-stuffs. The capital of the company is \$20,000 and headquarters will be in Boston.



AMERICAN DYESTUFF REPORTER

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With the Speech Delivered
Thereat by Dr. F. W. Taussig,
Chairman of the United States
Tariff Commission

Foreign Trade in United States Dyestuffs

By E. H. Killheffer

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Vol. 3

New York, December 9, 1918

No. 24

THE DYESTUFF MANUFACTURERS' DINNER

Dr. Taussig Warns Dye Manufacturers Against Arousing Political Opposition by the Public Expression of Discordant Views

THE first annual dinner of the American Dyestuff Manufacturers' Association was held on Friday evening, Dec. 6, at Sherry's, New York. The dinner followed the annual meeting of the Association at which it was expected that officers for the coming year would be elected and other business of importance transacted. After considerable discussion, however, the meeting adjourned without taking any action, but will convene again on Monday afternoon, December 9th, in joint session with the Dyes Institute. It is hoped that at this second meeting a union of the two organizations may be effected. The developments at this session will be covered in our issue of December 16.

The dinner proved to be a decidedly successful affair. Representatives of nearly all of the larger dyestuff manufacturing concerns were present as well as many of the leading consumers in the textile field. A marked spirit of optimism pervaded the gathering, which revealed that there is no lack of cordiality between consuming and manufacturing interests.

At the conclusion of the dinner M. R. Foucher, president of the association, introduced the toastmaster of the evening, Charles B. Landis, U. S. Congressman from Indiana. Mr. Landis made a most interesting and forceful introductory speech, in the course of which he made it clear that at least a large element in Congress was prepared to fight solidly for the protection of the American dyestuff industry.

The feature of the dinner was the address delivered by Dr. F. W. Taussig in his capacity of chairman of the United States Tariff Commission. Because of his position with relation to the dye industry, and because of the timeliness of the warning given in view of the extremely critical period now confronting the industry, Dr. Taussig's address probably transcended the others in importance, and it is herewith reproduced in full:

DR. TAUSSIG'S ADDRESS

It is not necessary for me to rehearse the events of the last three years or the facts of the present situ-

ation. You are familiar with the history of the industry and with its problems. You know well the extraordinary story—the unique dominance of the German industry before the war, the passive acquiescence of most countries in that dominance, the virtual cessation of imports during the war, the rapid growth of the dyestuffs manufactures in this country and in others. You know, too, that there is impending an equally sudden transition to new conditions. It is these new conditions that now demand our attention. I will not weary you either with congratulations on the achievements of the past, nor warnings about the possibilities of the future. Nor will I undertake any discussion of general questions of industrial policy or general problems of reconstruction. I will confine myself to the problem which is before the dyestuffs industry now and here.

Before considering, however, the possible lines of legislative action for the immediate future, I will ask your attention to one general proposition, simple and unquestionable in itself but of special relevancy at this time.

Stability is of the first importance for any industry and at all times. Business can accommodate itself to almost any conditions, provided they be steadily maintained. This is true as regards prices and wages, banking and monetary systems, income taxes and taxes on business, and, not least, as regards tariff duties. It is quite as important, probably more important, that duties should be settled as that they should be high or low, well or ill adjusted. It is imperative to know on what basis business calculations may be made.

Not only is this the case with regard to an individual business or a particular industry; it is true also as regards the prosperity of the country at large. Vacillation and uncertainty in tariff policy are probably more harmful than any extreme of high duties or of low duties. The good results which are obtainable through a

protective system endure only if such a system is maintained consistently for a considerable period—if time is given for the development of domestic industries, for growth under assured conditions, and for the introduction of improved methods through long-continued experiment. And similarly, the good results which are obtainable under a policy of free trade are dependent upon its maintenance over a long period. They can come only through steady competition among foreign producers and domestic distributors, and the adjustment of export trade as well as of import trade to larger volume. A consistent policy followed for a considerable stretch of time is in either case essential for the attainment of the desired results.

Let us now look at the situation which is to be expected in the immediate future in this country, and look at it frankly and openly. Let us not disguise the facts by vague generalities, by pleasant words, by rose-colored optimism. The truth, plainly stated, is that the outlook for stability is poor. Indeed, the prospects are of the slightest for anything in the nature of a settlement of the tariff. Consider the obvious facts of the political situation. We are at the beginning of the short session which closes the Sixty-fifth Congress. In the Sixty-sixth Congress, which will be in session from March 4, 1919, to March 4, 1921, there will be no unification of control, and hence there can be no unification of policy. One party will have a majority in the House of Representatives; the Administration itself is of another party; the Senate will be very evenly divided. Not only this, but the traditional division of opinion and policy on the tariff will not only be maintained, but is likely to be accentuated. The controversy on the protective policy will go on, and will be conducted on party lines. That controversy, it need hardly be said, is not between protection and free trade. The practical issue is one of

degree—whether there shall be high and strong protection all around, or limited and moderated protection. But the cleavage is clear. I will not undertake to say whether a permanent settlement will ever be reached in this country; but it would seem certain that not even such a provisional settlement as comes by the enactment of a general tariff law is within the bounds of probability for the next two or three years.

Further, we must expect a certain amount of political maneuvering. Legislation will be proposed and debated, not so much with an expectation that it will be enacted as with a design to make plain what is the policy proclaimed to the country, and therefore promised as likely of adoption if a more conclusive political settlement is reached. The drafted bills will be very much in the nature of a political platform. And if, by chance, any legislation is adopted by the present Congress, or by the next, it will be tentative and provisional, presumably to be revised in the Congress to follow.

In other words, nothing in the nature of a settlement of the tariff question, even for a period of four or eight years, is to be expected before the Presidential election of 1920 and the establishment of a new administration for the period beginning with March, 1921. Until that date the country will not know where it is, or whither it is moving as regards this important factor in its industrial prosperity. Whatever is done in the way of legislation during the session of Congress which begins in 1919 can hardly be more than provisional.

In forecasting the immediate future in this way, let me not be under-

stood to impute blame on any individual or any party. No arraignment is made, no criticism implied. The situation is the simple consequence of our constitution. It is an inevitable concomitant of the system of checks and balances. Our Government was not designed to be under unified control, nor is it adapted for the prosecution of a single-minded policy. The election of a new Congress in the middle of a Presidential term was expressly intended to give a check on the uncontrolled maintenance in power of any party or any administration. It is idle for us to speculate, in connection with such problems as we are here discussing, whether the system of checks and balances in this respect operates well. The mid-term elections have always brought perplexing consequences, and they will continue to do so. It is not a new thing in our history that legislation has become hesitating, uncertain, affected by political maneuvers and sometimes by political

pretenses, because of the patent fact that power was divided and that a settlement one way or the other was for the time being impossible. This was the situation in 1911-12, the era of the well-known "popgun" tariff bills. It is precisely the present situation. The uncertainty is most regrettable, but is clearly there. We should be like the ostrich, who buries his head in the sand, if we refused to view it openly and observe the consequences to which it leads. We must face things as they are.

It may be asked, however, whether some particular phases of the tariff question cannot be rescued from the general predicament and dealt with irrespective of party differences. Is it not possible that the dyestuffs industry can be treated by itself? Can it not be rescued from political strife? Is there not some chance that it will be considered upon its merits, without regard to political complications, and disposed of as an urgent matter needing immediate attention? Can not this brand be rescued from the burning?

There are grounds for hoping that special attention will be given to this industry, and that its case will be regarded as unique. Some promise of an attitude of this sort can be inferred from the enactment, two years ago, of the revised duties upon dyestuffs which are now in force. As you need not be reminded, a special title was contained in the revenue act of 1916 imposing revised and increased duties upon intermediates and upon dyestuffs. The legislation then put into effect was admittedly not satisfactory in every respect, yet was an earnest of the recognition of a peculiar situation. Moreover, the present admin-

istration, irrespective of any general attitude to which it is committed on tariff questions, has viewed with concern the dependence of this country upon foreign dyestuffs and has co-operated in the endeavors to bring about, not only by legislation but by departmental encouragement and support, the development of an American supply of dyestuffs.

Further, the industrial conditions are obviously different from those in many other industries. This is an entirely new industry. It is largely in the experimental stage. It has had a short and disturbed period in which to develop. It has not yet found itself in normal conditions. It is confronted by foreign competition from an industry which is not only long established and well equipped, but is organized in such way as to threaten ultimate danger to consumers as well as immediate danger to producers. And, not least, it is closely connected with the military problems, because of the interrelations between explosives and dye products. These are matters familiar to all of you. Indeed, so far as a gathering like yours is concerned, there is no need of explaining wherein your industry stands in a class by itself.

Not only this, but it would be admitted on all hands that there are matters connected with tariff legislation which could readily be disposed of without raising any controversial questions. Not every measure relating to import duties is necessarily contentious. Take, for example, the matter of customs administration. This has long been in a confused and unsatisfactory state. Admittedly there is urgent need of an amendment and clarification of the customs administrative laws. The Tariff Commission has prepared with great care a draft for such amendment, and has brought it to the attention of Congress in the hope that it may be disposed of without arousing political debate. Again, there are matters of classification and definition in the tariff laws, unexpected

and undesired anomalies, which also can be disposed of on simple grounds of consistency and common sense. Problems of precisely this type arise in the dyestuffs act of 1916, and in the chemical schedule of the act of 1913. Our immediate question is whether the duties on dyestuffs can be brought to the attention of Congress in such a way as to obviate strife, or at least to minimize it, and to secure early and unbiased attention to the special difficulties of the case.

The answer depends upon the way in which the situation is approached and handled. It seems clear that any proposal of an extreme character would arouse opposition and would stir controversy. A radically new policy of any sort has little chance of being carried into effect. It seems equally clear that any great division of opinion among those who are interested in the industry and who have given special attention to its progress would have the same effect. If the manufacturers, consumers, chemists, editors of chemical journals, the Tariff Commission itself—if all these come before Congress with different and discordant proposals, nothing is likely to be accomplished. Only if all concerned unite upon some moderate plan will it be possible to secure that unbiased and undisturbed attention which will result in legislation. If indeed there be a consensus of opinion from all quarters, then there is a possibility that the problem will be dealt with in a non-contentious spirit.

As you know, various plans and proposals have been suggested. Some of them must be characterized as extremes. It has been suggested that there be for a period of years an entire prohibition of importation. It has also been proposed, as an alternative, that there be something in the nature of discretionary prohibition. The alternative suggests that there be established a system of import license and import regulation, under which an administrative body shall

have authority to permit foreign dyes to be imported in cases where domestic supply is non-existent or quite inadequate, the American market, however, being reserved completely for the domestic producers as regards commodities which they are able to supply, perhaps at high prices but, at all events, in adequate volume and of satisfactory quality. Of a different sort is a proposal for entirely remodeling the present plan of classification in the act of 1916, by the virtual abolition of the class of intermediates and by the application of the same rate of duty to all products which are beyond the stage of crudes. There is something to be said for each of them, and there are objections to each. My present point is that, whether they are good or bad, they seem to be now not feasible of execution. They are radical beyond the limits to which measures must be confined which have a chance for enactment. Simplicity, moderation, no

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AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated.

A. P. HOWES, Publisher
LAURANCE T. CLARK, Editor

UNITED, WE STAND

It was, perhaps, significant that the first pronounced snowfall of the season should so nearly coincide with the first annual dinner of the American Dyestuffs Manufacturers' Association. For, as the snow descended, softly but surely covering the ground with a wet, fleecy blanket, so, we ardently hope, did the words of Dr. F. W. Taussig descend like another sort of wet blanket upon the secret aspirations and yearnings of some of our more rabid extremists in the dye industry.

We do not wish to imply, however, that Dr. Taussig was in the slightest degree pessimistic regarding the future outlook. His remarks partook rather of the nature of a friendly warning directed against those who, now that peace has come, have been formulating radical plans for "saving" the industry, and who may be about to lift up their voices in a crescendo of discord to inform the incoming Congress from all sides how the job may be accomplished.

This, Dr. Taussig tells us, will not do, and it is upon these individuals that we trust his revelations may have a dampening effect. The address delivered at the meeting of the dyemen, which is printed elsewhere in this issue, should be read and heeded by all who are in the remotest way concerned with the industry. Therein one may find some exceedingly sage observations and sober truths conveyed in a manner which is truly Wilsonian in its simplicity and which reveals unmistakably the scientific

habit of thought in its marked repression of the personal views of one who has the future welfare of the industry so thoroughly at heart.

Specifically, Dr. Taussig warns against loud demands for changes of an extreme character in that portion of the present tariff legislation which affects the dye industry, and against the public display of any great division of opinion among those supposed to be conversant with the problem confronting the industry. This problem, as he sees it, consists of steering the industrial ship safely through the treacherous waters of politics and past the whirlpools of factionalism which will threaten its stability during the next year or two. Without attempting to rail against the inevitable, he points out that nothing in the nature of a settlement of the tariff question can be expected prior to the Presidential election of 1920 and the establishment of a new administration for the period beginning with March, 1921. During this time the industry must likely submit to an unsettled policy.

Dr. Taussig expresses the hope, however, that the dye industry may, perhaps, receive special attention and be considered by our Solons as an industry unique among its fellows. To this end, he and his confreres of the Tariff Commission have drafted a bill to make effective the legislation of 1916, with certain modifications and extensions called for by obvious shortcomings in that measure, and this bill is shortly to be laid before the industry for approval, to be followed by its introduction into the House.

It will be well for the dye fraternity to remember, when considering this bill, that it represents the work of men who are not only anxious to see the industry prosper, but who are thoroughly schooled in the ways of politics and are able to translate business desires into the language best calculated to secure their realization with a minimum of party friction. We have Dr. Taussig's word for it

that this bill is an improvement over the 1916 enactment, and, without having seen it, would counsel the greatest possible unanimity in its support as the best way to avoid "spilling the beans" during a still critical period.

DYESTUFF DINNER

(Continued from page 9.)

violent departure from existing methods and existing legislation—these seem to be the requisites of a feasible plan.

The Tariff Commission has given prolonged and careful attention to the dyestuffs problem. It has secured a thoroughly competent expert staff of its own. It has conferred in the most painstaking way with the officials of the Administration, with the representatives of the customs division of the Treasury, with consumers and with manufacturers. It has proposed and elaborated a bill that conforms to the conditions which I have just indicated. That bill endeavors to make effective the policy adopted in 1916, and also to show the way to some moderate extension of that policy in new directions. The legislation of 1916 was in many respects a great improvement on what preceded. But defects have already appeared, and there is beyond question occasion for amendment. Evasion of some of the salient provisions of the present law is possible, especially through the importation of intermediates which are nearly advanced to the stage of finished dyestuffs. The bill prepared by the commission goes over the list of commodities with care, rearranges the enumeration of intermediates and finished dyes in such a manner as to prevent evasion, and removes some anomalies which clearly need attention. It raises frankly the question whether the specific duty of 5 cents which was not applied by the act of 1916 to indigo and to all indigoids, whether or not obtained from indigo, natural and synthetic alizarine, and dyes obtained from alizarine, anthra-

cene and carbazol, should be made applicable to these now excepted commodities. This opens a question of policy, but one which, as we may perhaps hope, will be dealt with irrespective of general party differences.

The measure which is proposed by the Tariff Commission may not be perfect, but we are confident that it represents a great improvement on what is now on the statute books. It is a measure of the sort which may be laid before Congress with propriety under any circumstances and at any time. It is the sort of measure upon which all concerned may unite, and which may receive the sober and cool-minded attention of Congressional committees and of Congress itself. This report is now in the hands of the printer and will be available for distribution at an early date.

If anything at all is to be done, it would seem that this is the practicable plan, and this the practicable procedure for bringing it to fruition.

In conclusion, let me say a word about the Tariff Commission itself, its functions and its duties, as illustrated by this particular case. During the debates which preceded the establishment of the Tariff Commission much was said about the need of a scientific settlement of the tariff question, and of the removal of that question from the domain of politics. This is utopian. It is quite impracticable, and indeed undesirable, that the settlement of a great question of principle should be put into the hands of any administrative body. The commercial and industrial policy of the country must be settled by the people and by Congress, and cannot by any possibility be taken out of their hands. Certainly the Tariff Commission has no such high-flying ambition. It is soberly conscious of the limitations upon its possibilities, and of the character of the work to which it must confine itself. Its business is to prepare the way for the intelligent and well-considered application of whatever policy the people determine by their votes and Congress

carries into execution by its legislation. Our business is to gather information and take preparatory steps such as will enable Congress to act with light and avoid ill-planned or misdirected steps. This is an important and much-needed kind of work. We have endeavored to do it in the particular case of the dyestuffs industry.

The commission would not go so far as to say that all information which it is possible to get is at our command; still less suggest that all the information has been secured which it is desirable to have. As you know better than anyone, the whole industry is in a stage of flux and transition the world over. In Great Britain, in France, in Switzerland, as well as in the United States, there are new developments. What will be conditions of international competition in the future, what the prospects of the various branches of the growing industry in the United States, no one can now say. Nor can anyone say, as I have explicitly pointed out, what industrial policy will finally be adopted by the United States. That policy cannot but be affected by the character and terms of the general international settlement. We cannot peer far into the future. For the moment we can follow only provisional lines of action.

The war is over, and with it the excitement and the shouting, the absorption in the task of the moment. Before us now are the problems of peace. We can no longer plan for what could be done and should be

done under the conditions of war. And it is no longer profitable to utter words of encouragement and confidence, and perhaps of glorification, which were natural during the stress of conflict, but now would simply obscure the troublesome facts of the new situation. These facts I have tried to face squarely, without concealment or equivocation or flattery. I trust that in so doing I have spoken in accord with your wishes, and perhaps have aided you in reaching a conclusion concerning the course of action which the representatives of your industry should follow.

Dr. Taussing was followed by Franklin W. Hobbs, president of the Arlington mills. Mr. Hobbs aroused considerable enthusiasm by his statement that he had found American colors, type for type, in every way equal to those formerly imported from Germany, and that he had the greatest confidence in the ability of American dyestuff manufacturers to produce, within a reasonable time, all the colors necessary for the textile industry.

Dr. J. Merritt Matthews also spoke. In introducing him, Mr. Landis indulged a bit of dry humor when he

gave the speaker's name as Dr. Sterling Merit. A majority of the diners, including Dr. Matthews, seemed to take it that the toastmaster had made an honest mistake.

Seated at the speaker's table, in addition to those already mentioned, were the following gentlemen: Darwin S. French, president of the Arnold Print Works; Henry Wigglesworth, chairman of the Board of Directors of the National Aniline and Chemical Company; F. S. Clark, president of the National Association of Wool Manufacturers; W. F. Shove, president of the National Association of Cotton Manufacturers, and W. H. Coddington, president of Sherwin-Williams Company.

Following the speeches vaudeville talent was introduced and a general good time was enjoyed until after midnight. It was the unanimous opinion of those present that the meeting was the most thoroughly successful event which has as yet marked the development of the American dyestuff industry.

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 470 Fourth Avenue, New York City.

D. P. & C. Co.—Question—In the manufacture of various chrome and acid colors we have experienced much difficulty in removing from the hands of operatives the stains which result from the manipulations of same, and would be obliged if you could recommend an effective cleanser.

Answer—The cleansing method given in the answer recently to the inquiry of W. C. Co. regarding the removal of Malachite Green stains, will also apply in the case of the above dyes.

A. K.—If you bring about a condensation of Michler's ketone with an amine, you will produce a dye of the fuchsine series. Crystal violet is manufactured in this way. The formula for Michler's ketone is:



J. W. M.—The molecular trans-

formation of a diazo-amido-compound into an amidoazo-compound, such as, for example—Amidoazobenzene from diazoamidobenzene, is brought about by heating together diazoamidobenzene and aniline hydrochloride, contained in a vessel regulated at 45 deg. C. and then adding aniline oil.

Dilute acetic acid is then added and the precipitate washed and treated with HCl until dissolved. From the filtrate, the characteristic steel-blue crystals of amidoazobenzene hydrochloride slowly tumble out of solution.

S. F. G.—Dissolve the coloring matter in a bath containing copper sulphate and sodium carbonate, which will form a lake. Then render this soluble in acetic acid, having in solution some sodium sulphate, and immerse the goods in the usual way.

A. A. G.—We are forwarding you the methods for testing dyestuffs, which you desire in order to carry out your research work on cotton, wool and silk. The formula at the bottom of page three is for preparing a bath to fix the colors.

J. W. K.—The solution you submitted for complete chemical analysis is composed of colloidal aluminium hydrate, and a working formula for its reproduction is now under way.

As this information is of a confidential nature, it will be forwarded you by mail as soon as completed.

FOREIGN TRADE IN UNITED STATES DYESTUFFS

By E. H. KILLHEFFER

In an article appearing recently in the *Textile Colorist* as to the future for us in foreign trade with our dyestuffs, there are a number of assertions made which I believe are quite common belief and yet are largely erroneous. What I have to say may sound very pessimistic, but I wish to state that my feeling is absolutely the reverse. My thought is simply that we should not minimize or depreciate the obstacles in our path, but should rather over-estimate them and make our efforts and achievements all the greater in consequence.

The general impression seems to prevail that the leaps and bounds with which our export trade in dyes grew during the last few years can be taken as some criterion of what we will do in the future. This impression or belief I think is almost entirely wrong, because the true explanation is really the fact that the world markets were bare and colors had to be secured somewhere. We did put forth great efforts at production and without doubt our achievements in that direction have been quite marvelous and in a very short space of time we have produced tremendous quantities of dyes. We having the supply, therefore, and the foreign markets providing the demand, the expansion in foreign trade was quite natural. During this time it must be remembered, however, Germany—the largest pro-

ducer formerly—was out of the market entirely, and England, France and Switzerland were not supplying their own demands with some few exceptions. This condition enabled us to practically name our own prices and make shipments abroad.

We are all agreed on the point that we want not only to keep our present foreign trade but that we wish to expand it considerably, and therefore I think it behooves us to look all the facts squarely in the face and plan accordingly, and some of these facts are the following:

In the first place, the statement that it will take our foreign competitors at least a year to gather materials and produce goods is not founded on fact.

England and Switzerland have been and are producing regularly and with the cessation of hostilities it is natural to suppose that their production will rapidly increase

In the case of Germany, it is, of course, pretty difficult to predict very much on account of the generally upset conditions, but my own conviction is that they will bend every energy, using fair means or foul, to rehabilitate quickly what was before the war one of their greatest strongholds in foreign trade.

In the second place, up to the present time we have produced very few comparatively of the best grade dyestuffs. By this I do not mean that our present products are in any way inferior to the same dyes formerly imported, for this is not the case. Our

dyes are absolutely the same in quality and fastness as the same product formerly imported. But I do mean to say that with many of the faster varieties of dyes we have made very little progress up to the present time and it is dyes of this character that play a very large part in trade.

On the basis of price we have not yet demonstrated our ability to produce as cheaply as our foreign competitors and even now they are offering dyes at half our prices in some foreign markets.

Our friends in various Government bureaus and in Congress should not be too optimistic about our achievements and position but should rather lend every effort toward helping to strengthen and fortify that position in every way possible—not forgetting proper protection to enable us to hold our own market where competition may be the most keen because of our market having been one of the best prior to the war, especially for the higher grade colors previously alluded to.

The suggestion to organize is a very wise one, for it is by organization and the most energetic further development that we will become strong enough to compete with the rest of the world.

We have most of the necessary raw materials in great abundance, we have the will and the ability to produce, and the ingenuity of our chemists and engineers is unsurpassed.

With all these basic factors in our favor, what we should do, I think, is to properly realize the magnitude and the seriousness of the other factors with

which we must contend, and devote our attention and energies accordingly.

STAND UP FOR AMERICAN COLORS

The above caption appeared over a recent editorial in *Drug and Chemical Markets*, which again sounds the timely warning that the brunt of the combat against German propaganda must be borne by the dye manufacturers and mills themselves. It is an old story, by this time, to our readers, but we believe that it cannot be repeated too often until the unwillingness of department store buyers to properly instruct their sales forces has been completely overcome. We quote:

Dyestuff manufacturers have endeavored to offset the German propaganda against American-made colors by soliciting the co-operation of the large department stores and dealers in textiles, most of whom have stopped the practice of tagging goods with notices that the colors are not guaranteed. The storekeepers are unwilling, however, to certify that the dyes are fast, taking the stand that they have nothing to do with the dyeing and cannot guarantee that colors will not run. The question comes to the front this season, again, owing to the heavy purchases of khaki handkerchiefs by friends and relatives of the boys over there who are making up Christmas boxes.

In a majority of the department stores in New York the saleswomen say the colors are not fast. A few say that American-made dyes are not as good as the German dyes, and in several stores it was declared that linen will not hold American-made dyes, a state-

ment based on ignorance of the basic principles of dyeing which might be taught with profit by the dyestuff manufacturers or by the owners of department stores. Cotton and linen take a dye suitable for vegetable fibers, and silk and wool are treated with colors adapted to fibers made from animal products. The statement that linen will not take American-made dyes is untrue. It may have originated in ignorance, or it may be German propaganda in new form.

BRITISH SOCIETY ALTERS RULES

Alterations in rules of the Society of Dyers and Colourists, the headquarters of which is at Bradford, England, provide for the elimination in future of the so-called Associate Memberships, according to a recent announcement by that organization. The qualifications for membership continue to provide, as heretofore, for the eligibility of persons practically engaged or interested in the use or manufacture of colors, and persons of scientific attainment in chemistry or physics. The former "associate" members consisted of persons having these qualifications, but under

twenty-six years old, an associate member being transferred to full membership upon attaining that age. Junior memberships will continue to be held by persons under twenty-one years old who are apprentices in these trades or students in universities or technical schools. It is further announced by the society that the annual subscription for members has been raised from one guinea to twenty-five shillings, and that for junior members from five shillings to seven shillings and sixpence.

NOTES OF THE TRADE

Owing to various reasons, the sale of the capital stock of the Bayer Company and of the Synthetic Patents Company, which was to have taken place last Tuesday at the Bayer Company's Rensselaer plant, was postponed by Alien Property Custodian A. Mitchell Palmer to Monday, December 9, at three o'clock p. m.

Announcement has been made by the Newport Chemical Works, Inc., Milwaukee, Wis., of the opening of a Boston office, to be located in the Newport Building, 68 Devonshire Street, that city. The new office will be in charge of W. A. Keating, for many years with the Kalle Color & Chemical Company. Other branch offices of the Newport Works are at 313 South Elm Street, Greensboro, N. C., in charge of W. M. Hunt, and at 602 Lafayette Building, Philadelphia, Pa., in charge of M. F. Schmidt.

The Pennsylvania Chemical Company, with headquarters at Philadelphia, has awarded a contract for the construction of a new one-story factory

addition to its plant to cost in the neighborhood of \$25,000.

An explosion, the cause of which is unknown, completely destroyed the plant of the Baird & McGuire Chemical Works, Holbrook, Mass., recently. The total loss is placed at more than \$50,000, which is covered by insurance. During the course of the catastrophe, four freight cars loaded with chemical products were destroyed.

Plans are under consideration by the Isco Chemical Company, Inc., Niagara Falls, N. Y., of which E. C. Speiden is vice-president, for the construction of a new extension to the company's plant at Lockport. The estimated cost will be about \$5,000.

Questions affecting working conditions and employment will be considered by the newly organized Works' Council formed by the directors of Pullars' Dye Works, Perth and Tullach, Scotland. Matters calling for arbitration will be discussed at meetings between the Council and elected representatives of the workers.

Incorporations papers have been filed at Paterson, N. J., by the Waldrick Bleachery, the Delawanna Print Works and the Manhattan Print Works, Passaic, that State. These three associated concerns have been in business several years, and each is engaged in printing, dyeing, bleaching and coloring all kinds of textiles. Each has an authorized capital of \$100,000. The incorporators are A. Foshay, A. G. Thaanum and Russell Goldman.

The Tezor Products Corporation, Manhattan, has been incorporated under the laws of New York with a capital of \$10,000 to manufacture a variety of products, including dyes and chemicals. The incorporators are S. M. Lazarus, I. Goldstein and S. Benson, 953 Hoe Avenue, the Bronx, New York City.



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A Weekly Publication devoted to

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"Circulated Everywhere Dyestuffs are Used"

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No. 25

THAT WASHINGTON MEETING

Manufacturers and Consumers Ask for Licensing Commission to Replace Dye Section of War Industries Board

VOTING unanimously for the discontinuance of the Dye Section of the War Industries Board, and going on record as being in favor of the subsequent creation of a commission with administrative powers to continue its work and to secure the passage of legislation providing for the licensing of imports in future, those present at a joint meeting in Washington on November 26 of the Government body referred to above and various representatives of the dye manufacturing and dye consuming industries, spent a busy hour and a half devoted to plans for the protection of the industry.

Some idea of the catholicity with which the industry was represented can be gained by inspecting the names of the fifteen hardy souls who journeyed to the Capital for the conference. The session was presided over by Victor L. King, of the Government body, who had with him as colleagues Dr. Grinnell Jones, chemist to the Tariff Commission, A. R. Willis and Millar Wilson. The industry at large, as well as in some instances the American Dyestuff Manufacturers' Association, was represented by William T. Miller, of

the National Aniline & Chemical Company; M. R. Poucher and Dr. Charles L. Reese, of E. I. du Pont de Nemours & Co.; C. Cyril Bennett, secretary of the dye manufacturers' organization; Henry L. Blum, of the United Piece Dye Works; Andrew C. Imbrie, of the United States Finishing Company; Dr. J. Merritt Matthews, of the Grasselli Chemical Company; E. C. Klipstein, of the firm which bears his name; Herman A. Metz, representing both the Consolidated Color & Chemical Company and the Central Dyestuff & Chemical Company; Irvin Rossi, of the J. G. White Engineering Corporation; Charles L. Auger, president of the National Silk Dyeing Company; W. H. Watkins, also of the National Aniline & Chemical Company; W. H. Brace, of Brace, McGuire & Co.; H. E. Mecklin, of Louisville, Ky., representing the National Association of Cleaners and Dyers, and W. A. Adams, of Charlotte, N. C., representing the National Council of Cotton Manufacturers.

It was proposed that the War Industries Board should recommend to Congress the appointment of a commission with powers sufficient to prevent the

importation into this country of any dye not licensed by the commission. Further discussion anent this resulted in an agreement to leave the character and formation of the commission in the hands of the Board. It was agreed that this course, which is being adopted successfully in England and Canada, would afford the best of protection for the industry during the unsettled period which is bound to transpire before the question of the tariff can be finally straightened out to the satisfaction of all representatives of the industry.

In opening the meeting Mr. King seized upon the occasion to thank both manufacturers and consumers for their co-operation with the Dye Section of the Board. He declared that owing to the signing of the armistice, all restrictions as to raw materials have been dispensed with, and consequently there remains but little for the Board, as a Government body, to do.

Discussing the question of discontinuing the Dye Section, Dr. Reese declared that he was not prepared to say just how the industry might best be protected in future, but stated that he did not believe that there is another industry in the country which requires protection of some kind more than the dye industry. "It is notorious," he continued, "that the dye industry went to the bad a great many years ago, owing to the lack of protection against the methods used by Germany in particular, and the dye industry will undoubtedly go to the bad again if some protection is not available against these same methods."

Pointing out that the War Industries Board is a war organization pure and simple, and that its term of life is therefore limited, Mr. King then read a statement from Franklin W. Hobbs author-

ized at a meeting of the Wool Service Committee of the wool manufacturing industry held in New York, which, after conceding the necessity of preserving the industry, continued: "As to the best means to preserve this industry, the committee is not in a position to express any positive opinion, but it was clearly of the opinion that this business should not be continued by the War Industries Board, and . . . in general the committee believes that the sooner all business is allowed to resume its natural functions, the better it will be for the country."

Subsequent discussion brought out the fact that the status of the War Industries Board is somewhat similar to that of the War Trade Board, through which it acts in all matters pertaining to dyestuffs. According to Mr. King, the sole business of the War Industries Board was to "aid the army to get what they wanted," and hence, with the signing of peace, this body would automatically go out of existence. Therefore, he pointed out, in order to make use of the information about the dye industry which has been gathered by this body, and to continue its work, it will be necessary either to preserve the Dye Section or to create another body to take its place.

Speaking for the consumers of dyestuffs, and particularly for the skein dyers, Mr. Auger declared emphatically for the appointment of any sort of body which would be able to prevent the recurrence of conditions such as obtained here in 1914-15. "Every time they have trouble in Germany," continued the Patersonian, "we would be compelled to go through the same thing again, and I think no time should be lost in doing everything that is possible for continuing our development in such a way that we shall be self-contained, so far as the dye industry goes, in this country. I can say that this is probably the opinion of all the skein dyers . . ."

The resolution which preceded the measure designed to create a commission was, after some further discus-

sion, read in tentative form by Dr. Matthews and, after one or two changes in the wording, was unanimously passed in the following form:

Whereas, it is conceded that a coal-tar chemical industry is essential to the national welfare in that it furnishes the plant, the technique and the intermediate products for the manufacture of high explosives, and

Whereas, the dyestuff industry is a vital, protective industry in that it is essential to the proper maintenance of our textile, leather, paper, printing ink, paint and allied industries involving upwards of two billion dollars of manufactured goods per annum, the labor of upwards of two million men, and over one billion and a half of invested capital, and

Whereas, the coal-tar and dyestuff industries and allied industries having an outlet in dyestuffs, as at present established in the United States, have been built up under the stress and exigencies of war conditions, involving the investment of upwards of two hundred million dollars of capital, and

Whereas, the production of dyes is highly essential to the economic well-being and comfort of the entire American people, in that color is a vital necessity in almost every phase of domestic life, as evidenced by the intense interest the American public has manifested in the development of the dyestuff industry, and

Whereas, owing to the necessities of war the first attention of the dyestuff industry has been mainly focussed on the production of dyes for government use in the coloring of goods for the army and navy, and

Whereas, the existence of the newly-formed coal-tar and dyestuff industry in this country is in great danger of being destroyed by the uncontrolled importation of great amounts of German coal-tar products through the ruthless methods as practiced by the Germans under pre-war conditions;

Now, therefore, be it resolved, that efficient measures be taken for the maintenance of the dyestuff industry in this

country, by the institution of a proper system of licensing imports or by the imposition of a sufficient tariff, or both, to properly safeguard the American industry from foreign competition.

The resolution embodying the request for a commission to handle the question of licensing imports or the imposition of a more rigid tariff, and to represent the industry generally, was worded as follows:

Resolved, that the War Industries Board be requested to make a recommendation that a commission in furtherance of this resolution be appointed, consisting of representatives of the dyestuff manufacturing interest and representatives of the dyestuff consuming interest, and the proper representatives of the Government, in order to bring into effective life recommendations made in this resolution, and that this commission should have administrative powers in the licensing of dyestuff imports in order to serve the best interests of the dyestuff manufacturing and the dye-

stuff consuming industries, and be it further

Resolved, that no dye should be imported except by license issued by this commission.

This was likewise passed unanimously, as was the additional resolution which set forth that owing to the fact that the requirements necessary to maintain the dye industry in this country were outside the functions of the War Industries Board, it was, therefore, the sense of the meeting that the industry would like to have the Board relinquish its control, and that, therefore, the Dye Section of the Board be discontinued. This resolution was, at the request of Mr. Adams, preambled by words expressive of the appreciation felt by the industry at large of the efforts of the Board in its behalf.

Active business transacted at the meeting was confined to these measures, all of which developed practically no opposition. Some of the oratorical contributions to the discussions were, how-

ever, extremely interesting, especially whose revealing the attitude of the consumers of dyestuffs toward the industry. Those expressing the attitude of the woolen trade and that of the skein dyers have already been quoted. The feeling among the dye consumers of the South was mirrored in the remarks of Mr. Adams, speaking for the National Association of Cotton Manufacturers, who declared that the large Southern consumers were vitally interested in forming some plan whereby the dye industry of this country could be protected and also fostered. "They are very anxious indeed," he averred, "for the dye industry . . . to be not only protected, but believe it ought to be put absolutely on its own feet . . . and I believe that our cotton manufacturers will do anything in the world to co-operate with the proper agencies to bring that about."

In discussing the advisability of creating a commission to take over the duties of the Dye Section of the War Industries Board, Mr. Poucher pointed out that in England, the British Board of Trade, which appears to correspond somewhat to our own Chamber of Commerce, takes care of such matters successfully, although invested with a great deal of power. This body represents the interests, "not only of the chemical industry, but of the consuming industry," he stated, and continued: "A very vital factor here is the position that it (whatever plan is adopted) leaves the consuming industry in. Any plan that is going to work any hardship on the consuming industry is not going to succeed in the long run." He added that it had got to be a plan which will be recognized as being so good that it will "work perfectly for everybody."

"Their idea in England," he pursued, "was primarily to build up the industry, and some objections were heard from the consumers, who wanted to know just where they were going to stand on certain products that were not manufactured in England, and their idea was, as I understand it, to find a plan that allowed licensing. The conclusion they arrived at was to settle it by a board which was composed of an equal number of dye manufacturers and consumers, and of the Board of Trade. There again, the Board of Trade and the controlling factor were fully informed in this industry. As a matter of fact, they were part of it. From my point of view there is quite a difference in their position and our position in the United States—isn't there? I think the . . . dyestuff manufacturers here have quite an open mind about it, and it is a question of what sort of plan can be worked out that will accomplish some results." Mr. Poucher concluded by hinting that it might be well to take advantage of the conclusions arrived at by England, where the industrial situation, including the English dye industry, was studied exhaustively for nearly two years before the plan for licensing was adopted.

Signifying his approval of the plan to create a commission in preference to a simple amendment of the tariff, Mr. Klipstein argued that a tariff law was, at best, a rigid, inflexible affair, which could not be changed quickly enough to meet new conditions as they might arise. Referring to the licensing of dyes, he said: "A commission can do that better than Congress, because a commission can change its regulations from month to month. Canada does that today." Earlier in the meeting he said that the Tariff Commission "is supposed to be there for the purpose of advising Congress what to do with the tariff on imports, and that is one way of regulating the importation."

"It strikes me," he continued, "that another body might be created to assist the Tariff Commission and advise with the Tariff Commission, and it might

have powers only with reference to the chemical business, with one commission having charge of imports, and the other looking after the interests of the industry . . ."

Additional points brought out in the speeches are in many cases worthy of notice, but space forbids their insertion in this issue. They will, therefore, be considered by themselves next week.

TWO NEW DYES

British Dyes, Ltd., of Huddersfield, are offering two new direct cotton colors, according to an announcement made by that firm. The first is known as Chlorazol Pink RD, claimed to be of excellent fastness to light and mineral acid (10 per cent sulphuric acid), while the second is known as Chlorazol Brilliant Sky Blue GW, suitable for cotton, linen, artificial silk, etc.

A recent fire at the plant of the Grasselli Chemical Company, Cleveland, Ohio, damaged the works to the estimated extent of \$175,000.

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A. P. HOWES, Publisher
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SIMPLE, YET SAFE

The meeting between members of the Dye Section of the War Industries Board and representatives of the dye manufacturing and dye consuming industries of this country, held November 26 in Washington, appears to have developed into a perfect love-feast of harmony and good fellowship. Judging, at least, from the minutes of the meeting, which have just reached this office, it is uncommon to find so complete a unity of purpose and the frictionless accomplishment of so much definite business in a gathering consisting of varied interests, as obtained here. It augurs well for the continued prosperity of the industry.

The decision to ask for the discontinuance of the Dye Section and for its replacement by a commission with administrative powers enabling it to license imports and thereby lay in the dust the bugaboo of German competition, would seem to be an easy and logical way out of the difficulty, and is furthermore in keeping with the system finally adopted in England after two years spent in studying how best to safeguard the domestic industry of that country. It would provide a neat, workmanlike club, compact yet weighty, and withal of excellent hitting power, which could be wielded with murderous effect upon the commercial skulls of possible Hunnish competitors.

Its chief virtue would lie, in fact, in the ease with which it could change its rulings to meet new conditions as fast as they arose, and compared, as a weapon of defense, with a merely

hoisted tariff, makes the latter seem unwieldy and cumbersome. Proposing it for acceptance or refusal may be likened to offering a friend his choice between an American Indian's exquisitely balanced tomahawk and one of the war-clubs carried by some Teutonic cave man in the ancient days when the Germans were once believed to be in a greater state of barbarity than they are at present.

It is, indeed, "so simple, yet so safe," and it remains to be seen whether or not the incoming Congress will like the idea. It will also be interesting to note whether or not anything of the kind is contemplated in the new tariff amendment which will soon be published for approval by the Tariff Commission. Those who attended the meeting may possibly find something akin to a hint, in the remarks of Dr. Grinnell Jones and others who helped frame the proposed measure, that the latter may leave the way open for just such a proceeding as the creation of a licensing commission.

At all events, the submission of such a plan to Congress would adroitly sidestep much of the opposition and traditional factionalism which inevitably rears its head whenever the word "tariff" is mentioned, and would, therefore, appear to stand a very fair chance of finding favor in the eyes of our legislators, particularly with the shining example of England before them. It would, moreover, if made a law by Congress, place in the hands of the industry by far the most effective weapon it could be provided with.

After being actively identified with the textile industry for a long period of years, William G. Benefield, Southern agent for American Aniline Products, Inc., died suddenly at his home, Danville, Va., on November 26, from heart failure. He was 66 years old, and up to four months ago had been associated with the Riverside and Dan River Cotton Mills.

THE BAYER CO. SOLD

The twice postponed sale of the capital stock of the Bayer Company and its subsidiaries was finally consummated by Alien Property Custodian Palmer on December 10. The successful bidder proved to be the Sterling Products Company, of Wheeling, W. Va., and the price paid was announced as \$3,100,000.

The Sterling Products Company is not a dyestuff concern. It is primarily a manufacturer and dealer in medicines and controls several well-known brands of proprietary remedies. It was undoubtedly the privilege of manufacturing and selling Bayer Tablets of Aspirin which induced them to become bidders for the Bayer patent. Whether they will continue to operate the dyestuff end of the Bayer business or will endeavor to sell it to others more familiar with the business is not as yet known.

The purchase, in addition to the Bayer Company proper, includes the Synthetic Patents Company, owners of the patents used by the Bayer Company and the Williams & Crowell Color Company, of Providence, R. I. There were about a dozen other bidders, including E. I. du Pont de Nemours & Co., who offered \$2,500,000.

At the office of the Alien Property Custodian, it was stated that while this sale is yet only provisional, and must be confirmed within thirty days by certain committees, there was no doubt in Mr. Palmer's mind that such confirmation would be forthcoming.

This sale disposes of the largest German owned dyestuff plant in America. Other sales of lesser importance, notably that of the Williamsburg Chemical Company, are to follow. It is to be hoped that Mr. Palmer's activities will

definitely and permanently eliminate the German interests in American dyestuff concerns.

MANUFACTURERS' ASSOCIATION AND DYES INSTITUTE UNITE

The meeting of the American Dyestuff Manufacturers' Association adjourned from Friday, December 6, reconvened in joint session with the Dyes Institute at the Hotel Biltmore on Monday, December 9. At this meeting it voted to merge the two organizations under the name of American Dyes Institute.

It was felt by all that the activities of the two organizations could be conducted to better advantage if an amalgamation was effected. The Dyes Institute is primarily an open price association. This function will be continued in the new organization as an Open Price Section. All members of the Institute will be eligible to sit in at the Open Price Section, but such action will not be compulsory. It is believed that the new organization will work out to the decided benefit of all its members and be of great advantage to the industry at large.

Committees from both bodies were appointed to report to their respective associations with recommendations that the amalgamation be effected and officers elected at the annual meeting which will take place early in January. There seems to be little doubt that such action will be taken.

VANDYKE BROWN

According to an English Patent (No. 118,735, 1917) noted by M. F. in the *Journal of the Society of Dyers and Colourists*, a vandyke brown is obtained from waste leather by grinding with solutions of caustic alkalis without boiling, and the pigments obtained dry more readily with linseed oil than vandyke brown as usually obtained from vegetable matter.

FOREIGN MARKETS FOR AMERICAN-MADE DYES

(Consul Addison E. Southard.)

The Aden Port Trust returns show imports of dyestuffs under four headings, of which synthetic indigo is by far the largest. The other three headings in the order of their importance are other sorts of dyes (principally lac dye), aniline dye and saffron. In normal times the imports of all dyes into Aden average about \$150,000 in value per annum.

There has been during the past two years a great shortage of dyes in the local market, particularly in synthetic indigo and aniline red. The principal sale for these two dyes has been in the Aden hinterland and in Arabian Red Sea Provinces. The Arab men in those districts dye all of their clothing an indigo blue when they can secure the dye, and the women demand an aniline red for use in coloring many of the garments which they wear. These Arabs grow some vegetable indigo, but, owing to the defective methods of preparing dyestuffs from this source, they seem to find the synthetic indigo cheaper and more satisfactory. They have also been able to obtain some vegetable indigo of a good and satisfactory quality from Indian sources, but no large amount of trade has been established in this product.

German-made synthetic indigo has dominated this market, and during the first two years of the war there were sufficiently large stocks of this dye on

hand to prevent any real shortage. Local dealers state that just before the war this dye retailed in Aden for $1\frac{1}{2}$ rupees (\$0.49) per pound, but a year ago the price had gone up to 6 rupees (\$1.95) per pound. There is now little, if any, obtainable. The demand for indigo blue offers the greatest opportunities for American-made dyes, and because of the great fondness of the Arab for this color the matter of price in the absence of competition is not of the usual importance. Practically all of the dye is for home use, and as the purchasing power of the people is in general quite limited they can buy only small quantities at a time. Half-pound and pound tins are the most desirable for the trade, and the tin should either be colored or have a wrapper the exact shade of color to be obtained by using the contents.

The small amount of vegetable indigo in the market is in the shape of round balls or small cakes. Before the war this article sold in the Aden market at the rate of about 10 cents per pound. It is now sold at 30 cents per pound. This dye is not, however, of great importance when the synthetic indigo is obtainable.

ANILINE RED DYES SELL WELL

The dye classified in the Port Trust returns as aniline is almost entirely of a semi-dark but brilliant red in shade. As has been stated, the Bedouin women use a great deal of this in dyeing their clothing. They are just as eager

to get it as the men are to get the indigo blue, and the price in the absence of competition is, therefore, of minor importance, although a consideration in establishing a permanent trade. A German-made dye supplied this demand also before the war, but for the fiscal year ending March 31, 1917, there were no imports of any origin recorded. Local dealers state that Aden retail price of the German dye in 1914 was at the rate of about 30 cents per pound, but a year later it had trebled in price, and at the present time there is none in the market. This dye also should be supplied in half-pound and pound tins, with the wrapping thereof colored the same shade of red as would be produced by the contents.

TEMPORARY DEMANDS FOR LAC DYE— SAFFRON HAS SEVERAL USES

Lac dye is imported from India in appreciable quantities, and is used for scarlet dyeing. This dye, however, was being replaced to some extent by German products, and the present demand may be considered as more or less temporary. As in the case of other dyes the Arabs are the best customers for

lac dye. In normal times it sold in 1-pound tins at 30 to 35 cents per tin.

The only other dyestuff of importance in the local market is saffron, which has also uses other than for dyeing. This is an orange-red color, of vegetable origin, and is imported mainly from India. It is used as a stimulant and in cooking. Arabs, Indians, and Somalis like it in their rice because of the pleasing odor and color thereby produced. It is also extensively used in coloring pastries and sweets made for the native trade. The Hindus in Aden use it in religious practices to color their foreheads. The saffron in the local market usually consists of the orange-red leaves of the plant from which it is obtained and comes in several grades, ranging normally in price from 2 to 30 rupees (\$0.65 to \$10.73) per pound. Present prices are nearly double.

The following table compares the imports of dyestuffs into Aden in the normal year of 1913-14 with those of 1916-17. The item of "all other" in this table, while made up largely of lac dye, also includes a fair proportion of tanning materials, which are not classified separately in the Aden Port Trust returns.

| Dyes and Dyestuffs | 1913-14 | | 1916-17 | |
|--------------------------------------|----------------|------------------|--------------|-----------------|
| | Cwt. | Value | Cwt. | Value |
| Aniline | 719.5 | \$18,658 | | |
| Indigo, synthetic | 1,429.2 | 123,031 | 14 | \$2,435 |
| Saffron | 0.5 | 92 | 5 | 719 |
| All other (principally lac dye)..... | 5,979.0 | 43,876 | 2,198 | 22,998 |
| Total | 8,128.2 | \$185,657 | 2,217 | \$26,152 |

The commercial language of Aden is English, but the dye trade is largely among natives who speak Arabic. Labels may be in either English or Arabic, but preferably in both. Tins only should be used for the dye, and the matter of colored labels already referred to is important. The currency in use here is the Indian rupee, and local importers prefer quotations either in that currency or in terms of sterling. The only local bank is a branch of the National Bank of India (Ltd.).

(A list of Aden dealers in dyes may be obtained from the Bureau of Foreign and Domestic Commerce or its district and co-operative offices upon referring to file No. 102-997.)

CHINA

(Consul Myrl S. Myers, Swatow.)

As a result of a "Trade Opportunity" published in "Commerce Reports," a local import and export firm (the name of which may be obtained from the Bureau of Foreign and Domestic Commerce or its district and co-operative offices by referring to file No. 104003) is in touch with several American manufacturers of aniline and synthetic indigo dyes and expects to receive trial shipments soon. If these prove satisfactory a good business should readily be developed in this line.

The value of aniline dyes imported into Swatow in 1913 was \$50,377, and in 1914, \$69,261. Imports of synthetic indigo amounted to 963,733 pounds, valued at \$109,215, in 1913, and 1,452,000 pounds, valued at \$293,481, in 1914. Since 1914 new supplies of German dyes have not been available and up to the present no others have made their appearance. There is no doubt that an

excellent opportunity exists for American dyes in this market.

For this market the dyes should be put up in tin cans of one catty (1 1-3 pounds) each. Just before the war artificial indigo was rapidly supplanting the locally produced vegetable indigo in the dyeing trade, but since then the production and use of native indigo have greatly increased.

Red dye is used largely for coloring paper, while indigo is used for native cloth.

With reference to a possible opening for American dyes in the Chungking district, a local Swiss firm has stated that some time ago they imported about \$31,690 worth of Swiss dyes into Chungking. It took them more than a year to sell out this stock, part of which was shipped to Chengtu, the provincial capital. Under normal conditions the dye business would be good, but at present it appears hopeless to this firm, which is not anxious to import a further supply. Judging by prices

quoted by American firms manufacturing dyes, the firm believes that American dyes could not possibly compete with Swiss dyes, which are far cheaper. It was further stated that to push the dye business much advertisement must be done and considerable capital must be used, as it has been the local custom to allow long credits when selling the dyes to dealers. Volume of sales appears to be dependent upon the length of credit granted.

On the other hand, a local American merchant (whose name may be obtained at the Bureau of Foreign and Domestic Commerce or its district and co-operative offices upon referring to file No. 102858) states that there should be great possibilities of selling American dyes in this market, as before the war German firms did a very large trade in dyes here. His firm would like very much to become the selling agents for some American dye firm if satisfactory arrangements can be made. He adds that during the war most firms are loath to ship goods on consignment and that they generally demand cash against documents, which makes it difficult for the buyer on the field. He has already placed a small order with an American firm for dyes.

It appears that in order to secure the business which the Germans formerly had in this district it would be necessary for the American dye manufacturer to advertise his wares extensively, quote low prices and liberal terms at the start, and to exercise considerable patience in the matter of getting

established among the Chinese. After the trade is secured it should prove lucrative. Rather than work directly with Chungking, it might be advisable for American firms to have a representative at Shanghai or Hankow and to carry, if possible, stocks at either of those cities. These stocks could be sent up to Chungking when needed and ordered.

MOROCCO

(Consul General Maxwell Blake, Tangier, July 6.)

Practically all aniline dyes imported into Morocco before the war were of German origin. As a result of the absence of paper factories or establishments for the coloring or printing of textiles or other enterprises requiring quantities of dyeing material, the importance of the trade in this article in Morocco has been extremely limited up to the present time.

The aniline dyes imported into the country are exclusively used by the Moorish dyers of silk and woolen thread and native leather. In the year 1913, the last year in which the import trade of Morocco may be considered of a normal character, these imports were as follows:

| Country of Origin | Pounds | Value |
|-------------------|--------|---------|
| France | 670 | \$195 |
| England | 1,212 | 54 |
| Germany | 28,293 | 1,048 |
| Austria | 882 | 191 |
| Netherlands | 2,502 | 438 |
| Total | 36,645 | \$9,170 |

Little attention has been given to aniline dyes in Morocco by the general importing trade. Such articles may be said to be handled in this country as a secondary line by import commission agents. Since the war almost unappreciable quantities of aniline dyes have been imported into this country, and it is reported that the quality is much inferior to that of the product formerly imported from Germany.

The colors principally in demand are fuchsine, orange, violet, poppy color, and blue. German colors were presented in the form of crystals and powder, but crystals enjoyed a much greater preference. Both crystals and powders required simply to be mixed with water. No dyes would be acceptable to the native dyers of Morocco if acids, salts, or other chemicals were necessary in their preparation for uses. The dyes were packed in tin boxes containing 500 grams (1.1 pounds) net each.

(A list of firms in Morocco which may be interested in representing American manufacturers of aniline dyes may be obtained from the Bureau of Foreign and Domestic Commerce or its district and co-operative offices by referring to file No. 104,893.)

STRAITS SETTLEMENTS

(Consul General Edwin N. Gunsaulus,
Singapore.)

There is a good market in British Malaya for the sale of American-made dyes, but it is absolutely essential that local conditions and methods be thoroughly studied by dye and chemical experts before any trade of importance can be developed.

The dye industry is principally in the hands of Chinese, who purchase their supplies through local European importers and distributors. Most of the cloth dyed is used in the manufacture of clothing, and in view of the fact that the bulk of the population is of the Chinese race, many unusual shades and colors are in demand.

There are many reasons why a clear understanding of local conditions is essential. One reason is that the Chinese

engaged in the dyeing industry generally hold to old methods and although many of them purchase modern dyes, some of the dyers mix with the European product crude local dyes made from banana peels, mangrove bark, and other products of the Malay Peninsula. Such a mixture has a chemical effect on certain dyes and renders them useless or unsatisfactory. A chemist or dye expert would be able to show the consumer that his method of dyeing, not the imported dye, was at fault.

Manufacturers in one of the European countries, which largely supplied the Straits Settlements with dyes before the present war, sent trained men to the Orient to study the market and familiarize themselves with the needs of the country. These representatives not only placed their products on the market, but they did much to educate the native consumer in the use of mod-

ern dyes Intelligent young Chinamen were sent to Europe at the expense of the manufacturers and given a thorough training in the large dye works and laboratories. These men returned to the Orient, and their services proved very valuable.

The shades and color effects desired by the local trade must be studied and understood before American manufacturers can secure a share of the dye trade of Malaya. An instance is related to show the great importance of this. A certain black effect is very popular with the Chinese. Some years ago the local dyers secured this color by dipping the cloth about fifteen times in a cold indigo solution, the cloth being laid in the sun to dry between dippings. This process was laborious and expensive. The representative of a European manufacturer studied this color and as a result this concern soon placed on the market a dye that would produce the proper shade with one dipping. It was necessary for the dye to be at a high temperature when the cloth was dipped, and therefore the next and probably the most difficult problem was to persuade the dyers to alter their methods, which necessitated raising the vats to make room for a fire beneath. Although the Chinese were slow in making the necessary changes and accepting the new method, the manufacturer eventually developed a good demand for this particular dye—a demand which could

never have been produced by the sole use of letters and samples.

VENEZUELA

(Consul Frank Anderson Henly, Puerto Cabello, June 17.)

The demand for aniline dyes in the Puerto Cabello district is small and confined chiefly to the two cotton mills which are operated in Valencia. There is also a small dyeing establishment in that city which imports for its own use. In addition, occasional very small orders for dyes are sometimes placed by general merchants and importers of drugs.

NOTES OF THE TRADE

That the E. I. du Pont de Nemours Powder Company was not a monopoly in restraint of trade under the Sherman anti-trust law, was the recent decision of the United States Supreme Court. In rendering this decision, the court upheld the ruling of the lower courts in the case of the Buckeye Powder Company against the du Pont Company.

Construction work has been begun on the first of the 100 dwellings to be erected by the National Aniline & Chemical Company at its Marcus Hook plant for us employees. The dwellings, upon completion, will comprise the new village at Naaman's, on the Delaware River.

In order to provide improved facilities for meeting the requirements of their trade, the Philadelphia offices of H. A. Metz & Co., Inc., have been removed from their former location at 104 Chestnut Street, to 132 Chestnut Street.

Lee B. Ault, secretary-treasurer of the Ault & Wiborg Company, Cincinnati, Ohio, passed away suddenly in his home in that city recently. Mr. Ault was 32 years old and is survived by his widow and three children.



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The Reporter

Wishes All Elements of the
American Dyestuff Industry

A Very

Merry Christmas

and an

Exceedingly Prosperous and

Happy New Year

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OUR PERISHING PRECEDENTS

Mortality High in Tradition Family These Days, Due to War and Rapid
Progress—Dye Industry About to Assist at Obsequies of Another?

IT is a well-known fact that, broadly speaking, motion, or change, is life, whereas long-continued inaction produces stagnation and eventually death. A child of five breaks his arm and it is placed in a sling until the bones knit together again. Let him continue to wear his arm in a sling until he is twenty-one, and the arm will be useless.

Precedents and traditions, then, are advantageous only so long as the conditions which produce them and which they are designed to meet continue in existence. And as conditions are constantly changing, and will always continue to change, almost any precedent or set of rules is likely to "go bad" if kept too long.

Certainly we can have no cause to complain of lack of change these days. The present war presents, in fact, what may be termed an unbroken chain of broken precedents. The entry of this country into the conflict constitutes in itself a broken precedent, for the warning contained in the farewell address of one George Washington to beware of entangling alliances, and to keep our skirts clear of European affairs and dif-

ferences of opinion, had been obeyed religiously ever since it was uttered.

But there was ample reason for discarding this rule, which was laid down for reasons perfectly sound at the time when Mr. Washington occupied the Presidential chair. In those days the United States would have offered easy picking, weakened as it was by the struggle with England, for almost any powerful European nation which desired to enrich itself. We needed time to get upon our feet, to develop our limitless resources and to organize. And so we resolutely refrained from meddling with European politics for many years. The outbreak of the great war, however, found us no longer the comparatively defenseless nation which we were then but, instead, one of the greatest powers in the world, well able to take care of ourselves and to take care of others, too, if need be. Hence, our duty being plain, we sailed into the thick of things, serene in the consciousness of our power and the knowledge that, were he alive, our first President would doubtless have been one of the first to advocate the step.

The extraordinary powers enjoyed

by President Wilson during the progress of the war are likewise, in many cases, examples of hitherto worthy precedents outgrown. His present trip to France is ideally typical of this; and although there are still those who drive and shake their heads over such a radical move, solely on the ground that "it was never done before," yet the great majority of broad-minded citizenry, refusing to be bound down by narrow traditions and the Chinese theory of respecting one's ancestors, endorse and applaud his action as being in perfect harmony with the altered conditions which prevail to-day.

Yes, these are great days for the joyous smashing of precedents, including the peculiarly obstructionistic idea of the "divine right" of kings, and hence the proposal to quit racking our brains over the erection of a leakproof tariff wall for the protection of the dye industry represents a great step forward in the direction of efficiency and progress, and is in keeping with the times.

In the first place, it has been pointed out on any number of occasions that "there ain't no such animal" as a solid and at the same time absolutely just tariff to be had for this industry. Years of study have failed to produce, from the innermost recesses of some of the keenest minds of the age, a tariff which is satisfactory to all; and, furthermore, no matter whether it be high, low or uses up every numeral handed down to us by the Arabs, it is at best a rather cumbersome sort of thing, for any attempt to change it quickly, or radically, or both, to meet suddenly arisen conditions is sure of much bitter opposition from one party or the other in Congress. The industry, in addition to struggling with fierce foreign competition, is likewise obliged to contend with

and circumvent, if possible, the inherited antipathies of a horde of professional politicians whose minds cannot be trained to comprehend the intricacies of a coal-tar chemical schedule during the period of their terms in office, and whose real interests often as not lie in planes as remote as the poles from the real issues involved.

This is, to be sure, no fault of theirs. It is simply a fact that the requisite detailed knowledge and experience cannot be possessed by all who have the shaping of our laws, and they are therefore obliged to substitute principle and party policies for intelligent decision, anxious to please though they may be. The exponent of a high tariff, for instance, will get up in the middle of the night to kill a free-trader, and vice versa. "When in doubt, vote with the party" is a slogan which has killed many a good piece of legislation, although, we are forced to confess, it has also prevented the passage of many an unjust law as well.

However, it is not our intention to quarrel with conditions as they exist; for, as Dr. Taussig pointed out in his recent address, this Government was designed particularly to prevent the continuance in power too long of any particular school of political economy, and there is much to be said on both sides.

The proposal, therefore, to substitute for the Dye Section of the War Industries Board a commission with administrative and legislative powers to look after the interests of the dye industry after the final articles of peace have been signed represents, in our opinion, the very best means of steering clear of the labyrinthine windings and mazes of political precedent.

Such a thing, like so many others during the war, has "never been done before." At least, it has never been done in this country, but it has been tried out, with every prospect of success, in Great Britain. It will mean the breaking of another precedent, sure enough; yet never was there a worthier cause for a demise, nor will there be

less mourning for an interment. The pall-bearers will be recruited from the Dye Section, whose functions will be undertaken by the licensing commission, for they have been the ones elected to apprise Congress of the industry's wish for the innovation.

So far as our opportunities have permitted us to sound out the trade at large, the universal attitude toward the proposal appears to be one of unqualified approval. And this is indeed well, for the trade has been warned that the only chance of securing the acceptance by Congress of wide changes in the present legislation lies in presenting to the public at large and Congress in particular a united front.

Some of the problems involved, should the commission be appointed, still call for the application of much profound thought and study, to be followed by a vote at another gathering of the dye fraternity. This might properly, and likely will, be taken up as one of the principal matters for discussion at the annual meeting of the American Dyes Institute to be held next month.

At the meeting between the dyemen and the War Industries Board representatives, held in Washington, it was, for instance, made plain by Dr. Grinnell Jones, chemist to the Tariff Commission, that a licensing system cannot be applied to dyes only. "If the present system of import and export will be continued," he declared, "I think it will be done on a good many commodities. I doubt if Congress will do it on one industry alone. Isn't it a fact that the dye industry has grown up since the war? Other industries are neglected in the same sense, and I think they should be protected."

"Let's assume," the speaker continued, "if you have a board with the power to prohibit importation of dyes, and that this board ruled a certain dye could not come into this country, would the textile people say that no cloth dyed with that stuff could come into this country? In other words, this license scheme is broader than dyes alone. It has got to apply to other things."

And so, indeed, it has; but for the

nonce the principal concern of our readers will be for the dye industry alone. If it develops that they have "started something" by the overthrow of a precedent—something which cannot, perhaps, be applied so happily to other industries—the questions relating to these matters can all be settled later on. For the present, it will be well to concentrate on the issues at hand.

GRASELLI CHEMICAL CO. TO ACQUIRE DYE DEPARTMENT OF BAYER CO.

The Sterling Products Company, of Wheeling, W. Va., which acquired the stock and properties of the Bayer Company and its subsidiaries at the recent sale conducted by Alien Property Custodian A. Mitchell Palmer, came into being some ten years ago when the interests of a number of proprietary medicine concerns were combined. The present name of the concern, however, was not taken until about a year ago, when the company was incorporated

under the laws of West Virginia with a capital of \$4,000,000, and it is expected that the stock of the concern will now be increased to about \$7,000,000. The new stock will first be offered, pro rata, to the present holders of the company, and it is believed that their subscriptions will absorb all of the new issue.

The officials of the company are as follows: President, H. F. Behrens, Jr.; general manager, W. E. Weiss, and secretary-treasurer, A. H. Diebold. These also comprise four of the seven directors of the company, the balance of which consist of Stanley P. Jadwin, of the firm which distributed the products; Otto Schenck, Charles A. Aul and Henry Stifel. Being primarily a drug and medicinal concern, however, it is not the intention of the Sterling Products Company to retain the dyestuff and chemical branches of the business.

Instead, under an agreement made with the Grasselli Chemical Company, of Cleveland, Ohio, made at the time

when the Sterling company was contemplating a try for the purchase of the Bayer properties, the dye and chemical departments will pass into the control of the Grasselli company for \$2,500,000. The latter concern, as is already known, is of French origin, and the stock is still held by the family connections of those who established the business. To what extent the Grasselli company will increase its stock upon assuming control has not as yet been made public.

ZOBEL COLOR WORKS INCREASES PLANT

The Zobel Color Works, Inc., has acquired a plant adjoining its present site in Brooklyn which was previously utilized for the manufacture of animal oils. The site is 400 x 180 feet, and has located thereon several large brick buildings. The Zobel company will not attempt to utilize any of the machinery at present in the buildings, but will have them entirely renovated and newly equipped with modern dye-making machinery.

This expansion was determined upon by the Zobel company after a careful consideration of conditions in the dyestuff market. It is their intention to materially increase their present output of Methyl Violet and shortly to produce Methyl Violet 6B in considerable quantity. The new plant will also be utilized for the manufacture of Paraphenylenediamine and some pharmaceutical products, such as saccharine and cumarin. They also expect to be able, in the near future, to manufacture a large proportion of the intermediates required for their present dyestuffs.

AMERICAN DYESTUFF REPORTER

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A. P. HOWES, Publisher
 LAURANCE T. CLARK, Editor

MAKE IT UNANIMOUS

The speech of Dr. Taussig at the recent dinner of the Dyestuff Manufacturers' Association showed that the attitude of the Tariff Commission is favorable toward any measure looking to the protection of the American dyestuff industry upon which the industry as a whole can agree. But he made it quite clear that if it became apparent that a wide diversity of opinion existed among the different elements of the industry there would be little or no chance of securing any beneficial legislation in the immediate future.

It is to be earnestly hoped that dyestuff consumers of the country will lend their moral and practical support to any efforts which may be made in this direction. We cannot believe that there is one consumer in a hundred who would knowingly assist in placing America in a position as defenseless in regard to dyestuffs as she was at the outbreak of the late European war, and yet there may be some who will feel that because anything in the way of a protective tariff may mean the payment of somewhat higher prices for dyestuffs, and considering only their pocket-books, will oppose anything in the way of protection. We believe consumers of the latter class are extremely few in number; in fact, we know them to be so, because of the fact that out of six hundred replies received to a recent questionnaire from this office only a mere handful recommended a low tariff. Nevertheless, even a very few feeble protests against the tariff measure which will be introduced at the next session of Congress might serve to tie

it up and prevent action being taken thereon. We sincerely hope that any consumer who may have such a protest in mind will reconsider his decision and, in a patriotic spirit, join with all the other elements of the industry in making the approval of the measure unanimous.

LICENSING IMPORTS

There is another measure looking to the protection of the industry which, to our minds, has far greater possibilities than any tariff legislation—this is the suggestion recently made that the United States adopt a licensing board somewhat similar to that established in England. Under such an arrangement it would become the duty of the board—which would be composed of both consumers and manufacturers—to admit to this country only such foreign-made products as were not competitive with those already produced here in satisfactory quality and quantity. Such an arrangement would do away with the objection often raised by consumers, that an extremely high tariff would prohibit the importation of colors which are vitally necessary to the textile and other trades but which, because of the difficulty of manufacture, have not as yet been successfully produced in this country. If some such proposition as this could be worked out, it is our opinion that it would prove practical and successful in enabling consumers of the country to purchase such foreign colors as were necessary and at the same time would protect the American manufacturers from competition on colors which they are now producing in acceptable quality and quantity, and in the development of which they have spent tremendous sums of money and many months of arduous labor.

**TRANSLATING OPTIMISM
 INTO ACTION**

On another page of this issue there is an announcement of a very considerable increase in plant and equipment by

the Zobel Color Works, of Brooklyn. This action on the part of the Zobel Company is most interesting, as it denotes a spirit of confidence in the future on the part of the smaller dyestuff manufacturers.

In recent months we have often heard it said that although the dyestuff industry would unquestionably survive in America it would be a survival of the fittest and that only ten or a dozen of the largest manufacturers could profitably remain in business. We have always been of the opinion that this contention was wrong; that smaller manufacturers, if they put out quality products, and particularly if they confined themselves to certain specialties, would find a ready and profitable market for their output. It is encouraging to find that at least one of the smaller manufacturers takes this same view of the situation and has the courage to back up his convictions by an investment in materially increased manufacturing facilities.

THE TAUSSIG SPEECH AGAIN

The view taken by the REPORTER that members of the dye fraternity will do well to display a minimum of discord in presenting their views to Congress on the forthcoming Tariff Commission bill, is evidently shared by an editorial writer in the New York Times, who, under the caption "American Dyes," recently commented upon Dr. F. W. Taussig's speech at the American Dyestuff Manufacturers' Association dinner as follows:

"Development of our new dyestuffs industry has been encouraged by the

Tariff Commission, and advice given to the manufacturers last week by Chairman Taussig came from a friend. Some of them ask that the industry shall be defended against German competition by exclusion of foreign dyes, the regulation of imports by a license commission, or a large increase of tariff duties. They were told by Dr. Taussig that these proposals were 'radical beyond the limits to which measures must be confined which have a chance of enactment.' The commission has prepared and will send to Congress a bill revising the present classification of dyes and intermediate raw materials. Enactment of it would give the industry some additional defense. Can action upon such changes be taken without regard to partisan differences?" Said Dr. Taussig:

"Is it not possible that the dyestuffs industry can be treated by itself? Is there not some chance that it will be considered upon its merits, without regard to political complications, and that the question will be disposed of as a matter needing immediate attention?"

"He sees ground for hope that the case will be regarded by Congress as exceptional and unique, and that the desired legislation will not be affected by partisan controversy over a general tariff policy.

"Our manufacturers of dyes should be guided by the Tariff Commission. They have built up a fine industry whose exports now exceed in value the imports from Germany before the war. Immediate action for defense is not needed. Germany may have no surplus of dyes next year for a foreign market. The high cost of raw materials and intermediates here is declining, and dye prices will naturally be reduced. In this downward movement there is the beginning of defense. And probably the commission's bill revising tariff rates will be passed. If the dye makers are reasonable in their treatment of consumers, giving them the benefit of lower production cost, Congress will not permit the industry to be wrecked."

TENDERING OF SULPHUR BLACKS

Experiments to Determine the Cause of Tendering on Cotton

By C. M. WHITTAKER

The following article is abstracted from the published work of Dr. Zanker and collaborators dealing with a long series of experiments conducted with a view to throw light on the causes of the tendering of sulphur black dyed cotton. The first experiments were carried out in 1913, and further results have been published at intervals since then. The writer considers the work to be a valuable contribution to the research already carried out by other investigators, and he has confined the experiments to a certain extent.

The method recommended for determining whether a sulphur black will tender or not is carried out as follows:

Dyed samples of equal depth are heated for one hour in an oven at 140 deg. Cent. The bank is then taken out and allowed to lie in the atmosphere till it has taken up the normal amount of moisture. It is then re-heated for a further hour to 140 deg. Cent., taken out and tested.

It is essential to carry out the work in the manner described, because the moisture of the atmosphere plays a definite part in helping the tendering. In every heat task a blank experiment should be made with undyed cotton yarn; this should be heated at the same time, in order to make certain that no tendering of the cotton is caused by the

high temperature alone. The progressive rate of tendering is indicated in the following table, and shows the action of temperature in promoting tendering. The same dyeing exposed to the given temperatures took the stated lengths of time to reach the same state of tendering:

| | |
|--------------------------------|-----------|
| Ordinary room temperature..... | 1½ years |
| 45-50 deg. Cent..... | 10 months |
| 60 deg. Cent..... | 4 months |
| 80 deg. Cent..... | 1 month |
| 100 deg. Cent..... | 72 hours |
| 120 deg. Cent..... | 31 hours |
| 140 deg. Cent..... | 2 hours |
| 160 deg. Cent..... | 1½ hours |

In every case free sulphuric acid could be found in the cotton.

The above method of testing has been in use since January, 1907, and since that date has been found to give reliable tests as to the liability of any special sulphur black to cause tendering.

The sulphuric acid did not arise from any free sulphur which might have fastened itself on the fiber, because all yarns before testing were extracted with carbon bisulphide in order to remove all the free sulphur.

The following method is used to determine the amount of total sulphur present in any sulphur black:

Two and a half grams of the material to be tested are put in a beaker with 75 c.c. of bleaching liquor at 2 deg., completely free from sulphate. The cotton is left in this liquor until it is bleached completely white, then squeezed out and immersed in a further 50 c.c. of bleaching liquor for one hour at 30-40 deg. Cent. By this means the last trace of sulphur is quantitatively

converted into sulphuric acid. The cotton is then washed five times with boiling distilled water and the washings added to the bleaching liquor. The total liquor is then evaporated down and acidified with pure hydrochloric acid, and the solution boiled in order to get rid of all the chlorine. The sulphuric acid is then precipitated by the addition of barium chloride.

The following results were obtained by four different estimations of one and the same dyed material:

| Deter- mination | S Cal- culated as SO ₃ | S Cal- culated as Sulphur |
|--------------------|---|---------------------------------|
| 1 | 2.56 | 1.023 |
| 2 | 2.67 | 1.070 |
| 3 | 2.65 | 1.068 |
| 4 | 2.59 | 1.031 |

The quantitative estimation of the formation of sulphuric acid in a sulphur black dyeing was carried out as follows:

The material was heated for two hours at 140 deg. Cent., according to the method already described, when it was found that the formation of sulphuric acid, even after heating one hour, was so considerable as to cause the yarn to depreciate 65 deg. in its breaking strength. After the cotton had been heated as above, it was put into an excess of caustic soda liquor, 1-100 normal. The caustic soda liquor was then titrated back and the amount of sulphuric acid was thus determined.

As a controlled experiment the sulphuric acid formed was also determined by precipitation with barium chloride. The figures were found to agree with the caustic soda method.

By this method the following tables were reached:

| Deter- mination | S Calculated as Sulphur |
|--------------------|----------------------------|
| 1 | 0.223 |
| 2 | 0.227 |
| 3 | 0.229 |
| 4 | 0.227 |

The amount of unchanged sulphur still left on the fiber was then determined by the bleaching liquor method:

| Deter- mination | S Calculated as Sulphur |
|--------------------|----------------------------|
| 1 | 0.742 |
| 2 | 0.700 |
| 3 | 0.731 |
| 4 | 0.743 |

To show how close the total of changed and unchanged sulphur corresponds with the total weight of sulphur found on the dyeing, the following table is given:

| Deter- mination | Total of Changed and Unchanged Sulphur | Total Sulphur |
|--------------------|--|------------------|
| 1 | 0.965 | 1.047 |
| 2 | 0.927 | 1.027 |
| 3 | 0.960 | 1.045 |
| 4 | 0.970 | 1.020 |

The next experiments were carried out to determine whether a longer heating than two hours, as already described, would convert more of the sulphur, shown to be unchanged by this heating, into sulphuric acid, because the above tables show that the proportion of sulphur which can be converted into sulphuric acid by heating at 140 deg. Cent. has a definite relation to the total amount of sulphur present. This relation is 1 of convertible sulphur to 4.5 of total sulphur present. Dyeings were heated for fourteen days to 60-70 deg. Cent., allowing every now and again

the yarn to take up its natural moisture. Although the yarn by this treatment was completely destroyed, the total amount of sulphur converted into free sulphuric acid was not increased by this prolonged heating.

These experiments, therefore, give the definite result that heating at 140 deg. Cent. for two hours is sufficient completely to convert all sulphur in the sulphur black into sulphuric acid which is convertible by this method. In other words, the sulphur that is converted into sulphuric acid, and causes the tendering, is only a definite portion of the total sulphur contents of the sulphur black. Repeated experiments have been made with many sulphur black dyeings, and have confirmed the above results.

In carrying out experiments with the actual dyestuff as distinct from the dyeings, great difficulty was found in purifying the dyestuff. The following method was carried out:

Fifty grams of commercial black were boiled in two liters of distilled water. Dilute acetic acid was then added to the solution until complete precipitation of the dyestuff showed itself by spotting on filtered paper. The precipitate so obtained could not be filtered, but by boiling for a quarter of an hour it gradually became thicker, until washing and filtering were quite possible. The precipitate was washed until there was complete freedom from sulphate and chloride. By this method 40 per cent pure dyestuff was obtained from the commercial dyestuff, and this had an ash content of 1.4 per cent, which consisted of alkali. The total amount of sulphur determined in this pure dyestuff amounted to 33 per cent.

COMPLETE CONVERSION OF SULPHUR

For a complete conversion of con-

vertible sulphur into sulphuric acid, the purified dyestuff was heated at 140 deg. Cent. till no increase in the acid contents took place. In a series of experiments the quantity of acid formed amounted to 8.1 per cent calculated as sulphur. This gave a proportion of 1 part of convertible sulphur to 4.1 of complete sulphur contents, which agreed very well with the results obtained by similar treatment of the dyeings, the result in that case being 1 to 4.5.

In the experiments for the conversion of the convertible sulphur in the dyestuff into sulphuric acid it was noticed that the least traces of heavy metals played a very distinct part in the ease with which the sulphur was converted into sulphuric acid. If the dyestuff was purified so that there only remained in the ash small quantities of alkali, the sulphur color had to be heated six times to 140 deg. Cent. in order to convert the convertible sulphur completely into sulphuric acid.

On the other hand, if the least trace of heavy metals, such as iron, was present, the convertible sulphur was converted into sulphuric acid by only once heating to 140 deg. Cent. The total amount of sulphur converted was the same in each case.

INFLUENCE OF SALTS

In order to determine the influence of salts on the formation of sulphuric acid in sulphur colors, several samples of purified dyestuff were mixed with sodium bicarbonate, sodium acetate and cream of tartar, in addition to traces of iron salts. They were heated four times for one and one-half hours in damp air to 140 deg. Cent. All additions accelerated the formation of acid. As is already known, acid-acting salts and traces of acid were also found to accelerate the production of sulphuric acid.

These results determine that the action of an after-treatment of sodium acetate is solely effective in so far as it neutralizes any acid that is formed, but beyond this the after-treatment does not prevent the formation of sulphuric acid; indeed, the above experiments definitely show that it accelerates the formation of sulphuric acid.

In order to prevent a subsequent conversion of the convertible sulphur on the fiber into sulphuric acid, experiments were carried out to oxidize this sulphur before dyeing. All experiments, however, showed that dyestuffs which were treated in this way lost the

greatest part of their valuable dyeing properties. The more sulphur that was oxidized the less soluble did the dyestuff become. The important fact is proved, therefore, that the convertible sulphur in sulphur black dyestuffs is absolutely necessary for the formation of a good black. The contents of convertible sulphur in the sulphur black determine the dyeing power of the black itself.

SUMMARY OF RESULTS

The chief results of this work may be summarized as follows:

After removal of any free sulphur by extraction with carbon bisulphide, 20-25 per cent of the sulphur in a sulphur dyestuff exists in the special chemically active and easily oxidized form, and is present on the fiber in the same form. Owing to its very fine state of division in the cellulose fiber, it is easily oxidized and causes the tendering. The remaining 80 per cent of the sulphur can only be oxidized to sulphuric acid by strong treatment, when the color is completely destroyed.

Sulphur, therefore, in sulphur blacks is present in three forms:

1. Mechanically free sulphur which may be extracted with carbon bisulphide.

2. Easily oxidizable, chemically active sulphur, which, by heating the dry dyestuff or the actual dyeing in the presence of air, is easily converted into sulphuric acid. This quantity amounts to 20-25 per cent of the sulphur contents.

3. Firmly combined or stable sulphur, only oxidizable by strong oxidizing agents, which entails the complete destruction of the dyestuff. This quantity amounts to 50-75 per cent of the total sulphur contents.

The mechanically mixed or free sulphur plays no part in the dye properties of the color, nor does it play any part in the tendering.—*The Dyer and Calico Printer*.

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 470 Fourth Avenue, New York City.

H. R. R.—You may purify your aniline oil by redistillation, taking care not to allow the temperature to rise higher than 184 deg. Cent. The resulting distillate should be colorless and possess a specific gravity of 1.024 at 16 deg. Cent. The characteristic color reaction you mention is with solution of bleaching powder, with which it gives a deep-violet coloration. As soon as the dyes have been identified, the results will be mailed you.

R. G.—We find that the cloth has been dyed with a fast blue. Salt water soap at a temperature of 175 deg. Cent. does not streak the color, and showing itself by chemical analysis to be mordanted with a chrome salt, it will be perfectly satisfactory for the purpose for which it is intended.

S. G. B.—If as you say, the color

is violet on dyed cloth, and is not decolorised but changed to buff when boiled in calcium chloride solution, then it is Madder and not Alcanna as you assumed.

G. P. R.—We received your sample of acetic anhydride and find it to be adulterated with hydrochloric acid and to contain too high a content of non-volatile matter. This is the direct cause of your low yields, and would advise that you return the balance on hand to the manufacturers.

NOTES OF THE TRADE

The demand for the more somber colors in fabrics used in the manufacture of women's apparel has, according to the trade press, temporarily given place to a fondness for brilliant hues. Of these, the "Victory colors," and a combination of the green of the Italian flag, a tearose shade and a touch of apricot, appear to have the call. The article adds, however, that there is little danger of the distaste for darker colors becoming permanent, nor for worry on the part of those who have stocked up with these lines.

With an authorized capitalization of \$2,600,000, the du Pont Chemical Company has been incorporated under the laws of Delaware, the charter being granted at Dover, that State. The incorporators named are Hunter Grubb, C. R. Mudge and W. S. Thomas, of Wilmington. At the same time, a charter has been filed, also at Dover, by the E. I. du Pont de Nemours Export Company, which, with a capital of \$100,000, has been incorporated by W. S. Gagan, C. R. Mudge and A. M. Gorman.

According to the *Textile World Journal*, the claim is being made by Australian chemists that they have discovered a process for the manufacture of a fast dye from a by-product of eucalyptus oil distillation known as "black-water." Nearly eighty colors have been produced and patents are being applied for.

As an offshoot of the Takamine Laboratory, Inc., which has increased its capital from \$10,000 to \$100,000, the Takamine Industrial Company, Ltd., of Japan, has filed an authorization at Al-

bany, N. Y. The capital of the latter concern is 50,000 yen, and it has leased a building at 12 Dutch Street, New York City, for offices and warehouse. This firm will import chemicals and raw materials for the American market, and likewise for the manufacture of products to be made at the factory at Clifton, N. J., formerly operated by the Takamine Laboratory. At the latter place, 120 Broadway, New York City, the research work in connection with the business will be carried out under the personal supervision of Dr. Jokichi Takamine himself.

Alterations are being made in the plans for the new addition to the Giant Powder Works, Giant, Cal., which were in process of construction. The new plant will be devoted to the manufacture of dyes instead of munitions.

Notice has been filed by the Benzo Chemical Company, 39 Cortlandt Street, New York, that the capital of this concern has been increased from a nominal \$5,000 to \$50,000.

It is expected, according to plans being formed by the company, that new additions to its plant to replace portions of the works recently destroyed by fire, will shortly be begun by the North Western Chemical Company, Wauwatosa, Wis.

With a capital of \$25,000, the Newport Dyestuffs Corporation has been incorporated under the laws of Maine to manufacture and deal in dyestuffs, chemicals, etc. Headquarters of the concern will be located in Portland.

Hydrosulphon Prune S, which is said to produce brilliant prune shades without resorting to topping, of excellent fastness to light and acid cross dyeing, is the latest addition of F. a Brassard & Crawford, Wakefield, Yorks, England, to their line of hydrosulphon colors. This color has been placed upon the market.



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By Dr. V. L. King

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SPEEDING THE PARTING GUEST

1918 Has Brought Much to the Dyestuff Industry, but Regrets at Parting Are Eclipsed by Possibilities of the New Year—
Dr. V. L. King's Review of What Has Been Accomplished

ANOTHER year has gone hurtling off the edge of the calendar into nowhere, and the publication of this issue of the REPORTER will see the completion of another chapter in the development of the American dye industry. It would be interesting to speculate as to the fate of that period of time which we designate as Anno Domini, 1918; one might be led to wonder where the years go when they leave us, and whether they are rewarded for the merits and punished for their sins. But we have no time; we are extremely busy trying to arrange the immediate present to suit us, and so we must leave this idea, tempting though it is, content with merely expressing the hope that 1918 will be sent to the Happy Hunting Ground for deceased annular cycles, if such a thing exists.

For it has been a good year, as years go, and deserves well of Destiny. In fact, one might say that it has been a perfectly corking year. It will be looked upon by posterity with the kindest of feelings, for though it brought many trials and tribulations, nevertheless these are far outweighed by the

fact that it rudely awakened the Hun from his fatuous dreams of conquest and Kultur, and thereby set the world to convalescing from the dreadful convulsions which have racked it these many months.

The Romans set great store by a deity known to them as Janus, and his name is kept alive for us by the month of—you guessed it!—January, which was named in his honor. He was the god of a "good beginning," and was represented as having two heads, one being that of a youth, to indicate "beginning," and the other that of an old man, to represent the "end." By the same token, he was also thought of as looking forward into the new year and backward over the old year simultaneously, for on the first day of January a great feast was held in his honor.

Unfortunately, we are not gifted in the former manner, but to gaze backward at what has taken place is not so difficult a task. We all know that the dye industry is entering upon a new year under particularly propitious circumstances. Some of the facts which brought about these circum-

stances, however, are most interestingly set forth by Dr. Victor L. King, chief of the Dye Section of the War Industries Board, who, in a statement just made public, reviews the able co-operation given the Board by all elements of the industry, during the most trying of times.

When the Washington meeting was held, it was suggested that it might be the proper caper to chronicle some of the more salient facts of the struggle to overcome obstacles produced by the war, and this task Dr. King is peculiarly fitted for because of the excellent perspective on the situation which his position enabled him to enjoy. His statement, therefore, is herewith presented to the industry, practically in full:

The Artificial Dyes and Intermediates Section of the War Industries Board wishes to take this opportunity to express again its appreciation of the enthusiastic co-operation and fine courtesy that the color industry as a whole has shown during all the period of the war. Under the most trying circumstances the manufacturers of artificial dyes and intermediates built an industry that was in operation in time to save the entire textile manufacturing business of the country from the far-reaching and disastrous effects of an actual dye famine.

Before the outbreak of the war, the American dyestuff industry had been represented by a few small manufacturers scattered about the country who were merely assembling the imported German intermediates into some of the finished dyes. A first attempt to organize an industry independent of the German manufacturers was immediately frustrated. In 1900 a few companies organized for the manufacture

of that most widely used and basic intermediate—*aniline oil*. The German manufacturers, alarmed at the possibilities of that enterprise, immediately flooded the American market and killed the project. They were able, by a continuation of this sort of policy, to prevent the creation of an intermediate industry, and our dye makers were entirely at their mercy. Recognized and encouraged by their Government and their people, the Germans were able to so dominate the world's market that they could afford to give their product away in the United States in order to prevent the growth of the dyestuff industry here.

The war period changed much of this situation. The whole-hearted support of the textile industries, the enthusiasm of the American people, and the encouragement of the United States Government, which had not been forthcoming prior to the war, began to take form. The great textile industry had not been deeply interested in the creation of an American dyestuffs industry, because colors formed only a moderate proportion of their manufacturing cost, and their needs were being so met by the Germans that they were apathetic regarding the future of the dye maker in America. When these colors became unavailable, however, not only the textile industry but the whole American public awoke to the realization of the fact, heretofore not even suspected, that dyestuffs were an essential ingredient in almost every useful article. The silk, cotton, woolen, worsted, leather, paint, paper, ink and similar industries suddenly found themselves vitally interested in colors. They were confronted with the inability, often, of not being able to finish \$100,000 worth of product because of the lack of \$1,000 worth of dye.

The color makers, who before the war had been engaged in merely assembling the dyes from intermediates manufactured in Germany, recognized at once the necessity and tremendous importance of creating a real dyestuff and intermediate industry in this coun-

try, and they set to work to accomplish it despite the fact that there was no adequate tariff protection on the most important ingredients of dyes--the intermediates. Probably one hundred million dollars of capital have been invested in this business since the beginning of the war, and to-day nearly all of the intermediates necessary for the dyes are being made on a commercial scale. The dye maker's work is not yet complete, but he has created approximately 200 dyes equal in every respect in shade, strength and working quality to the pre-war types, and he has made them from American raw materials and American intermediates in quantity and variety sufficient to keep the textile mills in operation. The American market consumes normally some three hundred dyes, but the American dye maker is steadily reducing the number of unavailable colors and shades. The development not only is recent but is still in vigorous process, and in the next ninety days several more of the most complicated dyes will be available in quantity sufficient to satisfy the home consumption.

Credit should be given to the Vegetable Dyewood Industry, which for a while came under the control of this section of the War Industries Board, for having stepped into the breach and increased its production some four-fold during the early periods when the artificial dye and intermediate business was passing through a period of feverish construction and before production had yet reached its present level. Soon the shortage of ships rapidly reduced the importation of the raw materials for this business and a rapid decrease in the production of vegetable dyes set in. By this time, however, the manufacturers of aniline dyes were beginning to deliver and were in time to save the day.

The color works supplied the Army and Navy during the war with certain absolutely indispensable ingredients (diphenylamine, dimethylaniline, etc.) for smokeless power and high explosives in such huge quantities that the

development of certain classes of colors was seriously retarded. As the explosive requirements increased, it became necessary to restrict the use of the raw materials for dye making purposes, and the production of certain classes of colors was practically prohibited, entirely suspending the splendid development that was under way. During this period the War Industries Board was supported and aided in the most loyal and patriotic manner by all of the manufacturers of dyes. The tremendous demands of the explosive maker for the same raw materials that are used by the color maker established the supply of those materials in the country, and as the requirements for colors bore only a small percentage to the requirements for explosives, the raw material for the industry became assured. The coke and coal tar industry built elaborate machinery for the recovery of by-products necessary for explosives, and even the illuminating gas plants in the various cities installed machinery

for stripping these same products from their gas. Without the war, however, and the national emergency, this tremendous upheaval in the coke and coal tar industry, so necessary to the production of these basic, and for the dyestuff industry indispensable, raw materials would never have been accomplished. Since the signing of the armistice it has been possible to remove the restrictions on basic raw materials, and the dye manufacturer may now get his full supply of toluol, xylol, acetic acid, etc., and the further development of the intermediate manufacture may continue. The United States is producing more of those raw materials than any other country and is, therefore, the logical source of supply for the outside world for manufactured intermediates. In some branches a productive capacity has been created which will rapidly develop an exportable surplus of these high-priced commodities.

This section of the War Industries Board owes tribute to the able work of Dr. J. F. Schoellkopf, Jr., whose

name is well known in the dye industry and who directed the work here until joining the colors last September.

The writer assumed the duties of Chief of the Section during the period when the need for raw materials for explosives threatened to cause a severe disturbance of the dye industry. The shortage of xylol was so great, for instance, that it was arranged to allocate this material and the exportation of dyes made from it was stopped. These colors were at once released after the armistice was signed and it had become possible to divert xylol to them from high explosives. Fortunately, it has now become possible to remove all restrictions.

An interesting example of the way in which the dye makers voluntarily cooperated with the war program in refraining from using any materials needed for the manufacture of explosives is afforded in the use of nitrate of soda. The color maker uses nitrate of soda which has to be imported from Chile, and as all our explosives are also made from it, it was necessary to keep the consumption of this product, also called Chile saltpetre, down to a minimum. The manufacture of dyes did not consume more than one per cent of the total importation, and three ships brought in on one trip enough for one year's supply. The development of the industry has gone on with the most scrupulous regard for the prosecution of the war, and not only was saltpetre saved and used frugally, but improvements were made entirely eliminating its use in certain operations. All azo colors, for example, are made with nitrite of soda, which formerly was manufactured from nitrate of soda (saltpetre) and for this purpose alone

some 150 tons monthly would have been required. One of our intermediate makers, however, was so successful in eliminating the use of saltpetre for this purpose that to-day only 25 per cent of the nitrite of soda used in the entire country is still made from saltpetre. Before the war nearly all of this material was imported. Surely it would be difficult to find a more signal triumph of American genius and determination.

An elaborate scheme for the conservation of freight space, metal for containers, labor, etc., so highly necessary during the last few months, was, when presented to the dye manufacturers, cheerfully endorsed, and although this Section will cease to direct the work, the trade association of the dye makers will, it is hoped, continue to carry it out. The shipment of sulfide of soda in fused form instead of crystal form, which is two-thirds water, was only one of many such savings.

The enormous demand for khaki and olive drab uniforms by the Army created during the months just preceding the signing of the armistice caused an acute shortage of sulfide of soda. The demands of the Army were double the greatest possible quantity the country could produce. There was no time to increase production facilities, and the necessity of curtailing the use of sulfide of soda for civilian purposes became apparent. Makers were ordered to fill only 25 per cent of orders going into civilian cloth, and recommendations were prepared prohibiting the use of khaki cloth for civilian purposes and the use of sulfide of soda for dyeing black hosiery. Most of us would have begun to wear unbleached stockings if the German army had not collapsed, as both the dye makers and hosiery makers showed a most patriotic spirit of sacrifice and were prepared to execute our orders with the utmost readiness.

Our dye manufacturers suffered not only from restrictions at home but also from pressure from abroad. The Swiss color makers combined to form

a foreign trade association and attempted to obtain the release of certain scarce raw materials from this country under promise of returning the dyes made therefrom to the United States only, but this section vigorously opposed such a policy, and it was not adopted. Recent developments point somewhat to Germany's hand in this matter, and it may have been just one more attempt on their part to regain the lost American market.

One of the raw materials largely used in the color business, as well as in the textile mills, and in the manufacture of photographic and medicinal chemicals, is nutgalls. These come largely from China, and the shortage of ships threatened to reduce the imports very materially. It was necessary for us, through the War Trade Board and the Shipping Board, to reduce the imports to a minimum and to allocate them when they arrived. It was feared that in working up the galls into tannin,

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A. P. HOWES, Publisher
LAURANCE T. CLARK, Editor

**WHAT 1919 HOLDS FOR THE
DYESTUFF INDUSTRY**

The advent of a new year marks an occasion of importance in all human affairs. It is the milestone by which we mark our progress or retrogression. It is the time when we take account of the successes or failures of the past and determine upon our plans for the future. It is a serious moment for all—individuals, corporations, industries, nations.

For the dyestuff industry the new year of 1919 is of most unusual importance. The coming twelve months will, in all probability, witness the inauguration of those conditions under which the industry must be expected to survive or perish during the coming years. The abnormal conditions which have existed in the dyestuff field since the outbreak of the European war will begin to give way to the normal conditions of peace. The coming year will mean, no doubt, a marked increase in competition, not only among domestic manufacturers but between them and the manufacturers of our allies and neutrals, and not improbably those of our late enemies as well. What this competition will develop it is, of course, too early to estimate with any degree of accuracy, but it is our firm conviction that our American manufacturers will meet the changed conditions successfully, just as American ingenuity and industry have always met and overcome commercial problems in the past.

Although we may assume with certainty that competition will be more

keen, there are other features which will aid the manufacturer in meeting this competition. Raw materials which during the past four years have been required for munitions will now be released in great quantity. The prices of these materials may be expected to decline, and there will be an ample supply for all. Moreover, chemists and technical men who have been engaged in war work will now be released to devote their energies to the problems of peace and the dyestuff industry may expect its full share of this talent.

Our government, which has shown the keenest appreciation of the efforts made by the American dyestuff manufacturers to supply the needs of the nation when former sources of supply were cut off, will not desert the industry now that this most pressing need is past. We may confidently count upon beneficial legislation—the character of this depending almost entirely upon what all elements in the industry can agree upon as the legislation most to be desired.

In view of all these facts we take the most optimistic view of what the coming year will hold for the dyestuff industry. We believe that we are on the threshold of the development of a color industry which will rank second to none in the world, that ere many years have passed American colors will be known the world over and esteemed as highly and held in as great confidence as the German products ever were. No great commercial structure was ever built without arduous application and painstaking attention to seemingly endless details; but we have no doubt that the American manufacturer, backed by generous quantities of American capital, can overcome all difficulties which will be presented, and that in the end we shall achieve one of the greatest successes of technical and commercial history.

The one obstacle which might retard or render impossible this success is a possible lack of co-operation on the part of the consuming element of

the industry. But we do not for a moment believe that American consumers of dyestuffs will knowingly jeopardize the permanent development of a strong and self-contained industry in this country. On the contrary, we are certain that every consumer, even though it may mean temporary inconvenience or slightly greater expense to himself, will rally to the support of the American manufacturers and accord them wholehearted and complete co-operation.

THE PARTING GUEST

(Continued from page 9.)

gallic acid, and pyrogalllic acid, too much of one might be made, creating a very serious shortage in one of the other products. For example, if the limited amount of galls imported should be largely worked up into pyrogalllic acid, we might be able to develop our moving picture films, but we should not be able to manufacture galloxy-

anin blue—a very important blue dye; or vice versa, and unless sufficient tannin also were made the textile mills would not be able to dye certain colors for which tannin is used as a mordant. The importers, therefore, before obtaining license to import, were required to sign a pledge to submit to us the proportions of the products into which they intended to convert the galls. About sixty per cent of the galls imported supply the photographic and medicinal trade with tannin, pyrogalllic acid and gallic acid, in the proportion of fifty-five tannin, forty pyrogalllic acid and five gallic acid. Forty per cent of the imported galls supply the dye and color trade with these materials in the proportion ten, twenty and seventy, respectively, and in order not to disturb the manufacture of photographic and medicinal materials, as well as dyestuffs, it was necessary to prevent dislocation of these proportions.

For a long time there was a scarcity of the chemicals manufactured from wood—wood alcohol, acetone, formaldehyde and acetic acid, and as all of those are largely used in making dyes, color making, in certain lines, notably indigo, was delayed. Nearly sixty per cent of the total output of acetic acid, for example, goes into dyes or dyeing, and nearly half of this for the making of the dyes themselves. In spite of the shortage of acetic acid and also of chlorine the manufacture of indigo has been developed to a point where its large scale production is now only a matter of time.

This section of the War Industries Board gave the manufacturers of colors and the users of colors an opportunity recently to express their desires, through their War Service Committees

in a meeting in Washington, in regard to the protection that might be necessary to safeguard continued existence of the color industries in this country. Both the dye manufacturers and the dye consumers were unanimous in their belief, and it is particularly gratifying to note the enthusiasm of the great textile industries on this point, that the American dyestuff industry should be maintained at all costs. It was the feeling that America knew the price she had paid for the lack of a dye industry when war broke out, and was prepared to pay any price to keep this industry now that it had been created.

A resolution was presented to the War Industries Board, and which is now being considered, to urge the creation of a Dye Commission on which not only the dye manufacturers and the dye consumers but also the Government should have representation, and that this commission should be endowed with power to license all importation of dye stuffs and intermediates, both as such and on the cloth. It is felt that the need for such a commission is very great and it is to be hoped that it may be created, that it may be given sufficient power to carry out its work effectively, and that it may be composed of men who have the interest of the whole country at heart.

To manufacture chemicals and allied specialties, the Northern Alkali and Chemical Company has been incorporated at Huntington, West Virginia, with a capital of \$60,000.

THE DU PONT COMPANY'S PART IN THE WAR

A man saving a single life is looked on as a hero. He is acclaimed by the newspapers, awarded a Carnegie Medal and otherwise honored.

But what honors can be high enough to bestow upon the savior of a great nation comprising millions of souls?

General Hedlam, of the British Army, on being introduced to an official of the Du Pont Powder Company exclaimed, "The Du Pont company is entitled to the credit of saving the British Empire."

England, unlike Germany, was not prepared for a war for world conquest. She was utterly unprepared to supply the powder necessary to enable her armies to beat off the prodigious Hun attacks.

The principal ingredients in smokeless powder are nitric and sulphuric acid and cotton. England grows no cotton at all, and her acid plants were entirely inadequate to meet the demands; but America could produce all the needed raw materials.

The Du Pont company built the powder plants, arranged for the supplies of ingredients and made the powder in the enormous quantities required to save Great Britain from the vandals. In so doing the United States was probably saved as well.

At one time during the war England decided to build an immense powder plant of her own. The Du Pont company sent experts over and

under their supervision, the mili was built. Then shipping became scarce, and it was figured out that it required seven shiploads of raw materials to make one shipload of smokeless powder. The result was that the big plant was not operated, and with the exception of the output of two comparatively small plants in the United States the Du Pont company made nearly all the powder used in the great European war.

And if this were not enough to make the Du Pont company anathema in the eyes of Germany, it is likely destined to be as great a thorn in her side in a commercial way hereafter as it was in a military way during the war.

Germany's greatest commercialized industry was dye manufacture. In that she was virtually supreme; now she will find her supremacy challenged by the same American spirit that blocked her designs for world military supremacy, for the Du Pont company has set out to utilize its vast expert chemical organization and plants in the manufacture of aniline dyes. Already her dye works are turning out and delivering to the textile and other trades many of the colors and shades that German dye works claimed could not be matched.

It is easier to lose a market than to regain one. Germany has that yet to learn. The Du Pont company and other American manufacturers hope to have easy control of the dye markets for years to come, reasoning that Germany's erstwhile enemies will be

very slow to resume trade relations with a country that has used its commercial profits for the upbuilding of a military machine with which to annihilate civilization. And this reasoning seems logical.

REMARKABLE EXPLOSION IN A DYE PLANT

Thirteen persons suffered shock and minor injuries, and the interior of the building at 66-68 University Place, New York City, was completely wrecked, as the result of an odd explosion which took place recently in the plant of American Aniline Products, Inc., at that address. According to press reports, about 117 pounds of alizarine dye was being dried in an iron drum preparatory to shipping, when the cap flew off and the air became filled with particles of this powder. Due to unknown causes this powdered dyestuff became ignited, and an explosion followed which tore away the partitions, blew the wall of the shipping room near the rear of the building up to the front, and sent a shower of broken window-glass into the street. The doors of the building, which is a six-story affair, were blown outward, and windows in the upper stories, as well as those in adjoining buildings, were broken. Across the street two large plate-glass windows were smashed, while windows in the Hotel Albert, also across the street, were shattered as high as the sixth floor of that structure.

B. R. Armour, president of the company, was at a loss to account for the

explosion, as the mixture being dried is not inflammable and certainly not explosive. It is well known, however, a chemist points out, that even coal dust, when in a finely powdered condition, becomes inflammable upon being disseminated through, and mixed with, the proper proportion of air, and under these circumstances, if ignited while confined within the walls of a room, will readily produce an "explosion" of considerable force. The effect of this is more on the order of that produced by gunpowder, in that it exerts an evenly distributed, powerful pressure on the walls of the confining chamber, and does not have the "shattering" effect characteristic of T N T and many of the high explosives.

It was such an explosion which took place in the works of American Aniline Products, as the published descriptions indicate that the partitions on the interior and the doors of the building were forced outward but not blown to bits. This points conclusively to what may be termed a rapid combustion (rather than a true "explosion") wherein gases several times the volume of the containing room were formed, and it is reasonable to assume that the heat generated by the milling was sufficient to cause the finely powdered dye to combine with the oxygen of the air, which suddenly became filled with this powder when the cap of the mill came off.

The plant employed twenty-five persons. The mill in question was located on the first floor, in the rear, and was being run by Frank Harrington, a dye mixer. Harrington told the police that the mill was running when the cap blew off, and before he could stop the machinery the mixture caught fire. He

ran and shouted an alarm, and had barely gotten clear when the explosion came which sent the doors and windows outward.

W. T. B. RULING ON DYE WOODS AND EXTRACTS

A new ruling of the War Trade Board (W. T. B. R. No. 250), restricts the importation into the United States of dye woods and vegetable dye extracts as to shipments made after October 10, 1918. All outstanding licenses for the importation of dye woods and vegetable dye extracts, except licenses for the shipment of the following articles, including extracts and compounds thereof; Annatto, roucou, rocoa, Orleans, cudbear, archil, litmus, madder, safflower, saffron, sumac, cochineal, indigo, natural or synthetic, have been revoked as to ocean shipment after October 10, 1918.

Hereafter no licenses will be issued for the importation of dye woods or

vegetable dye extracts, except to cover the following:

1. Shipment of the excepted articles enumerated in the preceding paragraph;

2. Shipments from Mexico or Canada by other than ocean transportation;

3. Shipments from Europe or Mediterranean Africa when coming as a return cargo from convenient ports where loading can be done without delay; and

4. Shipments during 1918 of the following commodities in the amounts stated.

(a) Logwood, 22,500 tons; (b) fustic, 1,250 tons; (c) gambier, 400 tons; (d) cutch (used exclusively for dyeing, not to include mangrove-bark extract), 1,250 tons; (e) nutgalls, 750 tons; (f) mangrove-bark extract from West Indian and South American countries only, not to exceed 375 tons; (g) all other dyewoods in crude state, 500 tons; (h) extracts and decoctions for dyeing or tanning, not otherwise provided for, from Central and South America, 450 tons.

The amounts of logwood, fustic, gambier, etc., permitted to come forward under the last provision will be allocated by the Bureau of Imports of the War Trade Board in accordance with the recommendations of the dye-material section of the chemical division of the War Industries Board. In accordance with this ruling, dyewoods and vegetable dye extracts are added to the list of commodities excluded from the terms of license PBF 27.

INQUIRY DEPARTMENT

All classes of chemical work or advice relating to artificial colors, natural dyestuffs, dyewoods, raw materials, extracts, intermediates, crudes, or dyeing chemicals and accessories in general, will be carried out for readers and subscribers of the AMERICAN DYESTUFF REPORTER by this department.

Inquiries of a minor character will be answered on this page, while major matters involving personal investigation, analyses, perfected processes and working formulas, will, if desired, be treated confidentially through the mails. All questions, materials for analysis or letters leading to the opening of negotiations for special work will receive prompt attention if addressed to Inquiry Department, American Dyestuff Reporter, 470 Fourth Avenue, New York City.

P. S. W.—Question—Some time ago we had a chemist make an analysis of one of our products, but cannot reproduce the material satisfactorily.

Answer—You have made the same mistake as many others, in thinking that a chemical analysis is, in itself, a working formula. Send us an average sample of the product and we will forward you full details for its reproduction.

W. A. S.—Question—Enclosed please find piece of silk dyed orange, which kindly identify.

Answer—The coloring matter is that known as "Aurantia," and the dyeing has been carried out in a soap-bath, broken or "curdled" with acetic acid.

B. H. C.—Kindly inform us how

much tannic acid and tartar emetic is required for 100 pounds of cotton goods.

Answer—Twenty pounds of sumiac or 3 pounds tannic acid, and 1 pound tartar emetic will be required. We recommend that you steep the cotton in the tannic bath for at least three hours.

M. A. H.—Under separate cover we are sending you three samples, which please identify.

Answer—The sample marked "A" is 50 per cent Benzol, that marked "B" is Heavy Crude Solvent Naphtha, and "C" 80 per cent Anthracene.

MILLS EXPECT DECREASE IN DYE PRICES

Because of the action of the United States Government in providing for the free distribution of government controlled wools, a prospect for increased trading in dyestuffs is opened up, since this will enable the textile mills to return to civilian work in the near future. There is, however, considerable doubt, thinks the New York *Commercial*, as to whether new business in dyes will assume anything like normal pro-

BLEACHING COTTON WITH BISULPHITE

Sulphurous acid in the form of an alkaline sulphite, or bisulphite, can be used, along with turkey-red oil, in the bleaching of cotton. Its decolorizing action is not apparent until after the souring of the goods, after which they are allowed to lie in heaps for two or three hours. If they are then washed and slightly chemicked a good white results. To milk of lime a weight of turkey-red oil equal to the weight of the lime is added, along with the necessary quantity of water, and then an equal weight of bisulphite of soda at 20 deg. Tw. The resulting liquor is milky, and settles but slowly. The goods are boiled in this, and then washed in hot water and soured with hydrochloric acid. They are then allowed to lie off for some time, under precautionary measures for the exclusion of draughts of air. A weak chemick bath completes the bleaching.

The process may be used for the rapid bleaching of piece-goods by padding them in the alkaline sulphite liquor, and then steaming for about two hours without previous washing. Subsequently the pieces are washed in hot water, soured with hydrochloric acid, washed, chemicked slightly, washed, and dried.

portions until dye prices have dropped to something like "an attractive level."

"Throughout the period of development of the American dyestuff industry," this newspaper continues, "the textile trade has loyally supported the domestic dye manufacturers. Now that lower raw materials will soon impend, the attitude of the textile interests is that prices should be substantially reduced in order that the benefits of the transition from a war to a peace time basis may be fully enjoyed by the latter."

NOTES OF THE TRADE

The Du Font Company of Wilmington, Delaware, has just issued a booklet that will be of interest to every chemist and consumer of chemicals in the United States. It marks the elimination of Germany from our chemical industries. It is a copy of the address delivered by Dr. Charles L. Reese, chemical director of the company, at the annual meeting of the National Association of Cotton Manufacturers, held in New York in May, 1918.

Every chemist and consumer of chemicals who was not fortunate enough to hear the address should write for a printed copy of it.

Sugar coloring and flavoring extracts will be manufactured by Robert

L. Woods, Inc., Manhattan, which was recently incorporated with a capital of \$10,000 by H. W. Palmer, B. B. Avery and I. W. Moore, 393 West End Avenue, New York City.

To manufacture woolen and worsted goods, the Alsace Woolen Company has been incorporated under the laws of New York with a capital of \$25,000 by J. and A. Schultz and R. Rubenoff, 247 West 102nd Street, New York City.

To operate a plant for the manufacture of dyestuffs, chemicals, etc., the Washington Dye & Chemical Corporation has been incorporated in Washington, D. C., under the laws of Delaware, with a capital stock of \$150,000. The incorporators are J. D. Hird, Oscar J. Ricketts and George T. Parker, of Washington.

Notice has been filed by the Republic Color & Chemical Works, Philadelphia, Pa., of an increase in the capital of this company from \$150,000 to \$250,000, to provide for business extensions.

With a capital stock of \$125,000, the Bee Hive Throwing Company has been incorporated under the laws of New Jersey to manufacture and sell silk, cotton and other textile goods. Headquarters of the new concern will be in Paterson.

Plans have been prepared for Kalltenbach & Stevens, Inc., Cranford, N. J., manufacturers of ribbons, for the construction of a new chemical laboratory. The work of building will be started shortly.

With a capital stock of \$250,000, the Ambrine Laboratories have been incorporated under the laws of New York to manufacture drugs, medicines and chemicals. The incorporators are H. O. Berg, H. V. Dunham and G. W. Jackson, 347 Madison Avenue, New York City.



PERIODICAL

